Flora of Chiapas

PUBLISHED BY THE CALIFORNIA ACADEMY OF SCIENCES

Part 3

MALVACEAE: *Paul A. Fryxell*

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List of Families for *Flora of Chiapas* With Number of Species Known at Present

(those listed in *Flora of Guatemala* are in parentheses)

Ferns & Allies	610 (650)
Conifers	14 (23)
Acanthaceae	115 (133)
Aceraceae	2 (2)
Actinidiaceae	13 (12)
Aizoaceae	7 (5)
Alismataceae	7 (7)
Amaranthaceae	30 (46)
Anacardiaceae	22 (18)
Annonaceae	30 (31)
Apiaceae	59 (50)
Apocynaceae	65 (70)
Aquifoliaceae	18 (10)
Araceae	106 (65)
Araliaceae	20 (22)
Arecaceae	58 (33)
Aristolochiaceae	17 (15)
Asclepiadaceae	77 (90)
Asteraceae	603 (511)
Balanophoraceae	1 (1)
Balsaminaceae	3 (2)
Basellaceae	5 (4)
Bataceae	1
Begoniaceae	45 (34)
Berberidaceae	9 (3)
Betulaceae	5 (6)
Bignoniaceae	50 (56)
Bixaceae	1 (1)
Bombacaceae	20 (14)
Boraginaceae	70 (65)
Brassicaceae	31 (34)
Bromeliaceae	126 (127)
Brunelliaceae	1 (1)
Burmanniaceae	5 (6)
Burseraceae	15 (12)
Butomaceae	1 (2)
Buxaceae	1 (2)
Cactaceae	42 (50)
Callitrichaceae	3 (2)
Campanulaceae	26 (33)
Cannaceae	5 (6)
Capparaceae	31 (28)
Caprifoliaceae	24 (18)
Caricaceae	9 (3)
Caryophyllaceae	36 (36)
Casuarinaceae	1 (1)
Celastraceae	32 (27)
Ceratophyllaceae	1 (1)
Chenopodiaceae	5 (5)
Chloranthaceae	1 (1)
Cistaceae	4 (5)
Clethraceae	16 (8)
Clusiaceae	29 (34)
Cochlospermaceae	2 (2)
Combretaceae	17 (14)
Commelinaceae	64 (60)
Connaraceae	4 (5)
Convolvulaceae	122 (144)
Coriariaceae	1 (1)
Cornaceae	2 (2)
Crassulaceae	32 (17)
Cucurbitaceae	56 (32)
Cunoniaceae	2 (2)
Cyclanthaceae	2 (5)
Cyperaceae	199 (185)
Cyrillaceae	(1)
Dichapetalaceae	3 (3)
Dilleniaceae	8 (8)
Dioscoreaceae	31 (24)
Droseraceae	3 (1)
Ebenaceae	9 (11)
Elatinaceae	1
Elaeocarpaceae	8 (7)
Ericaceae	44 (36)
Eriocaulaceae	2 (13)
Erythroxylaceae	8 (7)
Euphorbiaceae	256 (212)
Fabaceae	703 (553)
Fagaceae	39 (26)
Flacourtiaceae	40 (31)
Garryaceae	2 (2)
Gentianaceae	35 (36)
Geraniaceae	13 (7)
Gesneriaceae	59 (57)
Haemodoraceae	1 (1)
Haloragaceae	3 (3)
Hamamelidaceae	2 (3)
Hernandiaceae	3 (3)
Hippocastanaceae	1 (1)
Hippocrateaceae	12 (5)
Hydrocharitaceae	1 (3)
Hydrophyllaceae	10 (7)
Icacinaceae	6 (4)
Iridaceae	29 (22)
Juglandaceae	4 (5)
Juncaceae	16 (10)
Krameriaceae	2 (2)
Lacistemataceae	1 (1)
Lamiaceae	121 (100)
Lauraceae	96 (55)
Lecythidaceae	1 (2)
Lemnaceae	8 (7)
Lennoaceae	2 (1)
Lentibulariaceae	9 (17)
Liliaceae s.l.	124 (100)
Linaceae	5 (4)
Loasaceae	9 (6)
Loganiaceae	29 (24)
Loranthaceae	43 (42)
Lythraceae	47 (34)
Magnoliaceae	5 (3)
Malpighiaceae	56 (49)
Malvaceae	125 (95)
Marantaceae	18 (14)
Marcgraviaceae	6 (10)
Martyniaceae	1 (2)
Mayacaceae	1 (1)
Melastomataceae	141 (154)
Meliaceae	37 (32)
Meliosmaceae	3 (4)
Menispermaceae	11 (11)
Monimiaceae	7 (3)
Monotropaceae	2 (2)
Moraceae	68 (64)
Moringaceae	1 (1)
Musaceae	21 (13)
Myricaceae	3 (3)
Myristicaceae	2 (5)
Myrsinaceae	61 (61)
Myrtaceae	85 (96)
Najadaceae	1 (2)
Nyctaginaceae	31 (24)
Nyssaceae	1
Nymphaeaceae	4 (5)
Ochnaceae	10 (7)
Olacaceae	10 (5)
Oleaceae	18 (12)
Onagraceae	44 (46)
Opiliaceae	3 (1)
Orchidaceae	514 (527)
Orobanchaceae	1 (1)
Oxalidaceae	23 (17)
Papaveraceae	9 (9)
Passifloraceae	42 (42)
Pedaliaceae	1 (1)
Phytolaccaceae	11 (13)
Piperaceae	106 (158)
Plantaginaceae	5 (4)
Platanaceae	1 (1)
Plumbaginaceae	3 (3)
Poaceae	461 (455)
Podostemaceae	3 (4)
Polemoniaceae	10 (10)
Polygalaceae	30 (34)
Polygonaceae	44 (55)
Pontederiaceae	8 (8)
Portulacaceae	7 (5)
Potamogetonaceae	8 (7)
Primulaceae	7 (5)
Proteaceae	2 (3)
Punicaceae	1 (1)
Pyrolaceae	5 (4)
Quiinaceae	(1)
Rafflesiaceae	4 (3)
Ranunculaceae	21 (18)
Resedaceae	(2)
Rhamnaceae	25 (22)
Rhizophoraceae	2 (2)
Rosaceae	78 (70)
Rubiaceae	280 (298)
Rutaceae	42 (41)
Salicaceae	8 (6)
Sapindaceae	64 (63)
Sapotaceae	41 (33)
Saxifragaceae	11 (8)
Scrophulariaceae	86 (95)
Simaroubaceae	14 (13)
Solanaceae	150 (172)
Staphyleaceae	4 (4)
Sterculiaceae	34 (28)
Styracaceae	4 (3)
Symplocaceae	11 (10)
Tamaricaceae	2
Theaceae	15 (8)
Theophrastaceae	4 (6)
Thymelaeaceae	8 (6)
Tiliaceae	41 (25)
Tovariaceae	1 (1)
Trigoniaceae	2 (2)
Triuridaceae	(3)
Tropaeolaceae	2 (2)
Turneraceae	10 (7)
Typhaceae	3 (2)
Ulmaceae	10 (10)
Urticaceae	47 (55)
Valerianaceae	14 (12)
Verbenaceae	90 (70)
Violaceae	29 (23)
Vitaceae	19 (15)
Vochysiaceae	2 (2)
Winteraceae	1 (1)
Xyridaceae	2 (3)
Zingiberaceae	14 (14)
Zygophyllaceae	7 (5)
Total:	8248; 7749

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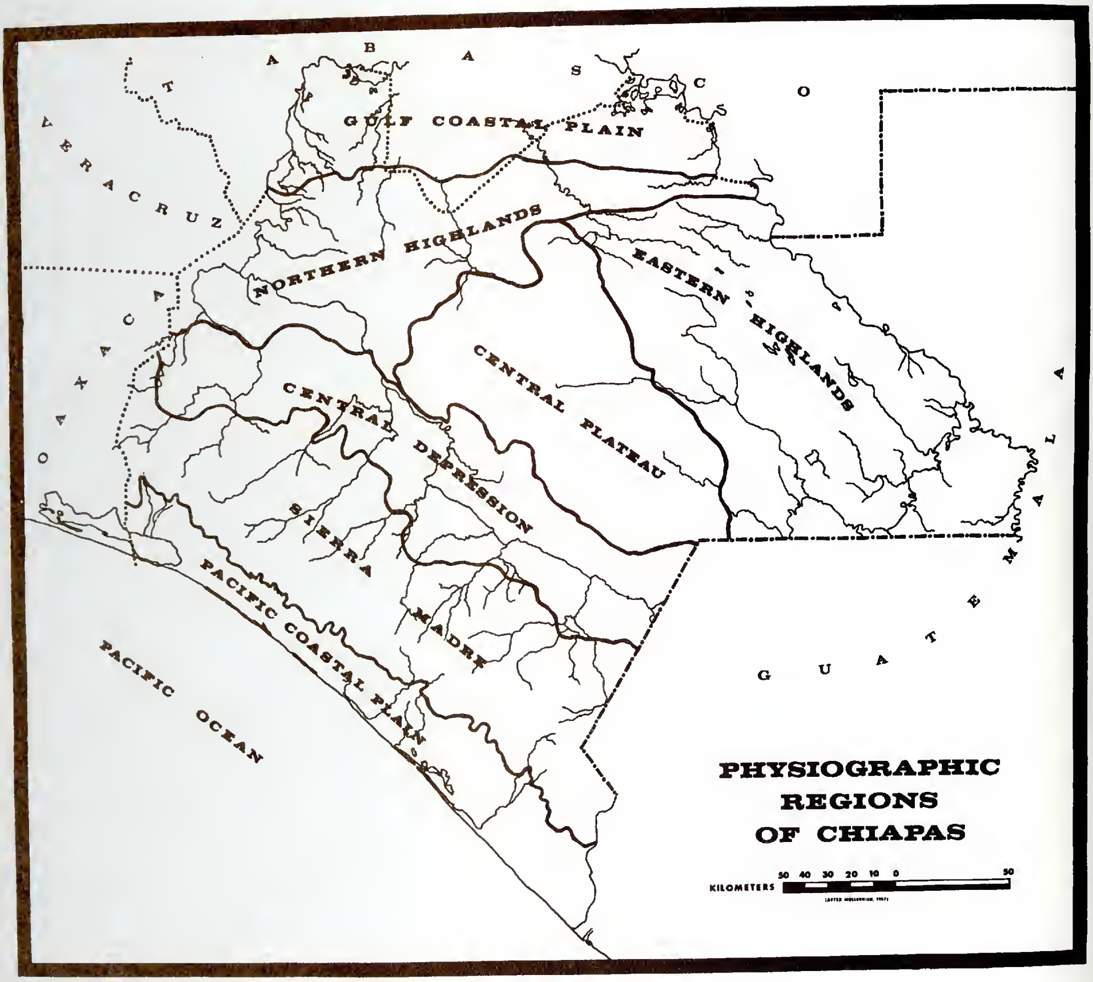

Map 1. Physiographic regions of Chiapas, Mexico (after Müllerried, 1957).

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MALVACEAE

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Herbs, shrubs, or trees; leaves alternate, stipulate, the blades ovate or lanceolate to reniform or flabelliform, sometimes lobed, with pubescence of stellate hairs, simple hairs, glandular hairs, or, rarely, squamose hairs. Roots usually woody, sometimes fleshy in perennial herbs. Stems erect or procumbent. Flowers solitary or fasciculate in the axils of the leaves or grouped into inflorescences (racemes, panicles, or, less often, cymes or heads). Calyx gamosepalous, 5-parted, 5-lobed, or truncate. Petals 5, distinct. Androecium monadelphous; anthers reniform, 25–100 or more (rarely reduced to 5); pollen spheroidal, echinate. Gynoecium superior, 3–40-carpellate; styles 1–40; stigmas capitate or decurrent. Fruit a schizocarp or a capsule, sometimes a berry, in some genera with an internal partition (endoglossum). Seeds reniform or turbinate, sometimes pubescent.

The Malvaceae includes over 100 genera and perhaps 2000 species. Its greatest diversity is in the tropics and subtropics; a few genera are characteristic of the temperate zones. On a world-wide basis, the family includes four large genera (*Sida, Abutilon, Hibiscus,* and *Pavonia*), all four of which are represented in Chiapas. The family is richly developed in South America and has other major centers of diversity in Mexico, Africa, and Australia. In Mexico 54 genera are known, of which 37 are reported from Chiapas, and four (*Abelmoschus, Malva, Alcea,* and *Lavatera*) are introduced. Certain genera, especially *Hampea, Dendrosida,* and *Robinsonella,* have their principal diversity in Chiapas and adjacent regions. Interestingly, all three of these genera are characteristically arborescent, a growth form that is exceptional in the family.

The format of the present treatment essentially follows that established by Smith in the Pteridophyte volume of the present series. For the sake of uniformity, the abbreviations used in his list of collectors are followed and extended. Collectors and abbreviations in the present treatment area included in Appendix 1. Collections are cited by collector's abbreviation, collector's number, and herbaria of deposit, except for collections of D. E. Breedlove, which are cited by number only. The first set of Breedlove's collections is at CAS, with duplicates distributed elsewhere. The following herbaria have been consulted for Chiapan specimens: CAS, CHAPA, DS, ENCB, LL, MEXU, MO, PH, SMU, TEX, UC, US, among others, as well as my own herbarium (cited as "pf"), which is rich in Malvaceae.

ACKNOWLEDGMENTS

The drawings that grace this treatment were done by Sally Shaw (Figs. 3, 5, 8, and 27) and Karin Douthit (all other figures). I am grateful to both of these artists for lending their talents to this work. Some of the Douthit drawings were originally prepared to be used in the Flora Novo-Galiciana (Figs. 2, 7, 9, 11, 12, 13, 14, 17, 18, 20, 21, 24, 26, 28, and 29); I thank the University of Michigan Herbarium and Rogers McVaugh for permission to use these drawings in the present work.

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FRYXELL, P. A. 1988. The Malvaceae of Mexico. Syst. Bot. Monogr. 25:1–522.

KEY TO THE GENERA OF MALVACEAE OF CHIAPAS

a. Fruits capsular; staminal column surmounted by 5 apical teeth; carpels 3–5; involucel present.
  b. Stigmas decurrent; carpels 3–5; black punctae present in petals, calyx, or herbage; bractlets of involucel 3 (Gossypieae).

c. Trees (sometimes large shrubs), often dioecious; flowers 5 cm diameter or less; petals pallid, reflexed; involucel of inconspicuous subulate bractlets; seeds glabrous, arillate .... 13. *Hampea*

cc. Shrubs, usually in houseyard cultivation, perfect-flowered; flowers more than 5 cm diameter; petals cream to yellow, sometimes with a red spot at base, not reflexed; bracts of involucel prominent, cordate, foliar, laciniate; seeds lanate, producing cotton .... 12. *Gossypium*

bb. Stigmas capitate; carpels 5; black punctae absent; bractlets of involucel 8 or more (Hibisceae).

d. Capsule depressed, 5-winged; seeds 1 per locule; plants often scabrid or hispid (especially fruits) .... 18. *Kosteletzkya*

dd. Capsule ovoid or elongate, not winged; seeds several per locule; plants of variable vesture.

e. Calyx spathaceous, asymmetrically splitting down one side at anthesis, deciduous in fruit; fruits usually elongate; plants introduced and cultivated or naturalized .... 1. *Abelmoschus*

ee. Calyx symmetrical, pentamerous, persistent; fruits more or less ovoid; plants indigenous or cultivated, mostly shrubby; foliar nectaries sometimes present .... 15. *Hibiscus*

aa. Fruits schizocarpic (or, if pseudocapsular as in *Dendrosida, Bastardia,* and *Abutilon,* involucel absent); staminal column with 5 apical teeth or filamentiferous at apex; carpels 3 to many, often more than 5; involucel present or absent.

f. Staminal column surmounted by 5 apical teeth; mericarps 5, dry or fleshy, 1-seeded; styles and stigmas 10 (twice as many as mericarps); involucel usually present, 5–20-parted (Malvavisceae).

g. Involucel absent but flowers subtended by specialized floral bracts and aggregated into capituliform inflorescences, the bracts often dissected and setose; corolla lavender, white, or yellow; mericarps dry .... 21. *Malachra*

gg. Involucel present, the bracts linear to oblanceolate, specialized floral bracts absent; flowers variously disposed; corolla yellow, red, or lavender, often conspicuous; mericarps dry or fleshy.

h. Flowers with exserted genitalia; plants shrubby to arborescent.

i. Involucellar bractlets 8–9; calyx 7–18 mm long; petals auriculate; fruits fleshy, usually red .... 22. *Malvaviscus*

ii. Involucellar bractlets 15 or more; calyx 2–3 mm long, concealed by involucel; petals not auriculate; fruits viscid, blackish .... 20. *Lopimia*

hh. Flowers with included genitalia; petals not auriculate; fruits dry; plant habit various.

j. Leaves with prominent foliar nectaries; bractlets of involucel 5, alternate with calyx lobes; mericarps with numerous glochidiate spines; corolla lavender .... 33. *Urena*

jj. Leaves lacking nectaries; bractlets of involucel 6–15; mericarps with 3 retrorsely barbed spines or spines lacking; corolla of various colors .... 27. *Pavonia*

ff. Staminal column antheriferous at summit; mericarps 3–40, dry, 1–5-seeded; styles and stigmas as many as the mericarps; involucel present or absent, if present, usually 2–3-parted, except 6 or more in *Alcea* (Malveae).

k. Mericarps horseshoe-shaped, indurate, 1-seeded, in a circle surrounding central columella forming a depressed fruit; stigmas capitate or decurrent on style branches; involucel present.

l. Bractlets of involucel 6 or more, partially connate; flowers showy (sometimes double), in spiciform inflorescences; introduced garden cultigens .... 3. *Alcea*

ll. Bractlets of involucel 2–3; flowers showy or inconspicuous, variously disposed.

[m. Bractlets connate basally; large shrubs with showy axillary flowers; cultivated .. 19. *Lavatera*]

mm. Bractlets distinct; herbs or small shrubs; flowers various.

n. Stigmas decurrent on styles; plants ascending to erect; corollas lavender or purple; leaves rotund or flabelliform .... 22. *Malva*

nn. Stigmas capitate; plants erect; corollas white, yellow, or purple; leaves various.

o. Climax leaves ovate or lanceolate, essentially unlobed; mericarps pubescent or hispid, ridged or armed; corollas yellow .... 23. *Malvastrum*

oo. Climax leaves more or less deeply lobed; mericarps glabrous, smooth or ridged but unarmed; corollas white or purple.

p. Corollas white; plants 1–3 m tall; mature mericarps black, smooth .. .. 17. *Kearnemalvastrum*

pp. Corollas purple; plants to 1 m tall; mature mericarps yellow-brown, ridged .... 24. *Urocarpidium*

kk. Mericarps otherwise, 1–5-seeded; stigmas usually capitate or dilated apically; involucel present or absent.

q. Mericarps thin-walled, rounded, more or less inflated.

r. Mericarps 1-seeded, sometimes collapsed around the seed at maturity to form a samara; involucel absent; petals 6–23 mm long; flowers aggregated into multiflorate axillary fascicles or panicles; trees or large shrubs .... 30. *Robinsonella*

rr. Mericarps several-seeded, always inflated (though laterally compressed if numerous); involucel present or absent; petals 6–70 mm long; flowers solitary or in 2–5-flowered inflorescences.

s. Involucel of 3 bracts or bracts gamophyllous, deciduous; petals 3.5–7 cm long; flowers in 2–5-flowered axillary umbels; styles and mericarps 30–40; large shrubs .... 29. *Phymosia* ss. Involucel absent; petals 0.6–3 cm long; flowers solitary in the axils; styles and mericarps 8–15; perennial herbs or shrubs.

t. Shrubs to 3 m tall; styles and mericarps 8–9, with 2 long (6–12 mm) spines at the base of each mericarp at maturity; corollas purplish, 3–4 cm diameter .... 26. *Neobrittonia*

tt. Perennial herbs or subshrubs less than 1 m tall; styles and mericarps 12–15, spineless; corollas white or pale yellow, 1–1.5 cm diameter ... 14. *Herissantia*

qq. Mericarps often indurate and/or reticulate-walled, if thin-walled, not inflated, often apically differentiated.

u. Mericarps elliptic in cross-section and dorsally keeled, twice as long as the column, sometimes apically rounded but usually acute or apiculate, the spine becoming double only as a result of dehiscence at maturity; involucel absent.

v. Mericarps 1-seeded.

w. Seeds glabrous, 1–1.5 mm long; fruits 3–5 mm diameter; mericarps with small endoglossum .... 4. *Allosidastrum*

ww. Seeds minutely puberulent, 2–2.5 mm long; fruits 5–10 mm diameter; endoglossum absent .... 7. *Bastardia*

vv. Mericarps 2–7-seeded.

x. Mericarps not differentiated into upper and lower cells.

y. Mericarps with a small (2 mm) endoglossum below lowermost seed, 5-seeded, black at maturity; uppermost leaves sessile .. 16. *Hochreutinera*

yy. Mericarps without endoglossum, 3–6-seeded, usually tan or brown (often black in *Bakeridesia*) at maturity; all leaves petiolate.

z. Leaves entire, the venation camptodrome; pubescence usually ferrugineous, the stellate hairs often stipitate; mericarps rounded, usually (except *B. pittieri*) with erose wings on dorsal margin .... 6. *Bakeridesia*

zz. Leaves dentate to subentire, the principal veins terminating at the margin; pubescence various; mericarps acute to apiculate (sometimes rounded), without wings .... 2. *Abutilon*

xx. Mericarps differentiated by a constriction into a 1-seeded lower cell and a 2-seeded upper cell.

a′. Cells of mericarp separated internally by a double endoglossum; constriction externally obscure; styles and mericarps 5–9 .... 2. *Abutilon* sect. *Anasida*

aa′. Endoglossum present (and simple) or absent; constriction externally manifest; styles and mericarps 3–5.

b′. Calyx less than half length of mature fruit, not prominently nerved; petals yellow; mericarps 4–5, minutely glandular-puberulent to glabrate, apiculate; staminal column manifest .... 35. *Wissadula*

bb′. Calyx approximately equaling mature fruit, more or less prominently nerved; petals pale lavender; mericarps 3, hirsute, rounded; staminal column rudimentary, much shorter than the filaments .... 8. *Bastardiastrum*

uu. Mericarps trigonal in cross-section, with a differentiated dorsal wall, approximately equaling to twice as long as the column, rounded, acute, or 2-spined apically; involucel present or absent.

c′. Involucel present; prostrate perennial herbs with rotund digitately-divided leaves; corolla brick-red; mericarps setose, divided by endoglossum into upper and lower cells with one seed each .... 25. *Modiola*

cc′. Involucel absent; plants mostly erect with ovate leaves; corolla white, yellow, lavender, or scarlet; mericarps various.

d′. Endoglossum present.

e′. Mericarps 3-seeded; uppermost leaves sessile .... 9. *Briquetia*

ee′. Mericarps 1-seeded; all leaves petiolate;

f′. Endoglossum elaborately pectinate, closely enveloping seed, originating in ventral wall of mericarp; mericarps dehiscing at maturity and flaring widely, becoming wing-like; flowers solitary in the axils .... 11. *Gaya*

ff′. Endoglossum simple and inconspicuous, originating in dorsal wall of mericarp; mericarps essentially indehiscent; flowers in terminal panicles .... 4. *Allosidastrum*

dd′. Endoglossum absent.

g′. Lateral walls of mericarps disintegrating at maturity.

h′. Petals erect, scarlet; genitalia exserted; stigmas clavate .... 28. *Periptera*

hh′. Petals spreading, lavender; genitalia included; stigmas capitate .... 5. *Anoda*

gg′. Lateral walls of mericarps persistent.

i′. Calyces 2–3 mm long, basally ecostulate; petals dark purple, reflexed; inflorescences paniculate, the pedicels capillary .... 32. *Sidastrum*

ii′. Calyces > 4 mm long, basally 10-ribbed; petals yellowish or purplish, not reflexed; inflorescences various.

j′. Leaves palmately lobed; corolla purplish; fruit disciform; lateral wall with persistent coarse reticulum, otherwise evanescent .... 5. *Anoda*

jj′. Leaves usually simple (or if lobed the plants with yellow corollas); fruits various, not disciform; lateral walls of mericarp indurate, persistent.

k′. Large shrubs or small trees 3–10 m tall; flowers 3–7 cm diameter; mericarps with smooth lateral walls, blunt apices, remaining together making the fruit a pseudocapsule .... 10. *Dendrosida*

kk′. Procumbent herbs or erect herbs or subshrubs; flowers < 2.5 cm diameter; mericarps usually reticulate or otherwise differentiated below and with two apical spines (sometimes suppressed), the mericarps separating and becoming the dispersal units .... 31. *Sida*

1. ABELMOSCHUS

Abelmoschus Medikus, Malvenfam. 45. 1787. —Lectotype (Britton and Millspaugh, Bahama Flora, 1920, p. 272): *Abelmoschus moschatus* Medikus (≡*Hibiscus abelmoschus* L.).

Robust herbs or shrubs, annual or perennial, tomentose or hispid. Leaves large, long-petiolate, palmately lobed, crenate or dentate, lacking foliar nectaries. Flowers axillary, solitary; involucel of 4–16 bractlets, persistent or caducous; calyx spathaceous, splitting asymmetrically at anthesis and falling with the corolla; petals 3.5–8 cm long, yellow with a dark spot at the base; androecium included, columnar, apically 5-toothed; style single with 5 subsessile stigmas. Fruit an elongate capsule, pubescent or hispid, 5-carpelled; seeds 3–4 mm long, reniform, pubescent or lepidote. Base chromosome number: x = not certainly known; reports have been $2n$ = 56, 58, 68, 72, 130, and other numbers.

Abelmoschus is an Asiatic genus of six or more species, some of which have been introduced elsewhere in cultivation, sometimes becoming naturalized. *Abelmoschus esculentus* (“okra” or “chimbombó”) is widely cultivated for the immature fruits, eaten as a cooked vegetable.

References: Borssum Waalkes, J. van. 1966. Malesian Malvaceae revised—*Abelmoschus*. Blumea 14:89–105; Bates, D. M. 1968. Notes on the cultivated Malvaceae 2. *Abelmoschus*. Baileya 16:99–112.

a. Pedicels 1–2 cm long; capsules glabrous or with dense glandular hairs 0.5 mm long; bractlets of involucel mostly < 1 mm wide .... 2. *A. esculentus*

aa. Pedicels 5–8 cm long; capsules with stiff hairs 1–3 mm long; bractlets of involucel > 1 mm wide ..... 1. *A. moschatus*

1. **Abelmoschus esculentus** (L.) Moench, Methodus 617. 1794.

—*Hibiscus esculentus* L., Sp. Pl. 696. 1753. —Type: “esculentus 15” (LINN—875.31, as microfiche!).

Illustrations: Hill, Exot. Bot. *pl. 23.* 1772; Herter, Fl. Ilus. Uruguay, fasc. 13, *fig. 2165.* 1965; Bates, 1968:111; Molinari, Publ. Inst. Bot. Agric. [Buenos Aires] 7(fasc. 124):72, *pl. 15.* 1965.

Erect annual herb, sparsely pubescent with short, rigid hairs. Leaves 5–25 cm long, slightly wider, 5–7-angled or -lobed, crenate, with widely scattered simple hairs above and beneath. Pedicels 0.5–2 cm long, accrescent; involucel of 8–12 linear bracts, caducous; calyx 1–3 cm long, hispid; petals 3.5–4.5 cm long, yellow; pollen pallid; stigmas purple. Capsule fusiform, 9–13 cm long (or more), dehiscent, glabrous or with short, simple, glandular hairs; seeds numerous, squamose or striped, 4–6 mm long; $2n$ = 72, 118, 120, 122, 130, 132.

In gardens; in cultivation as a vegetable in all parts of the world, in temperate zones as well as in the tropics. Unknown in the wild, of Asiatic origin. Chiapas Collections: none seen.

2. **Abelmoschus moschatus** Medikus, Malvenfam. 46. 1787.

≡*Hibiscus abelmoschus* L., Sp. Pl. 696. 1753. —Type: Hortus Cliffortianus (BM).

ILLUSTRATIONS: Bates, 1968:105; Fl. Taiwan 3:712, *plate 782.* 1977; Fl. Lesser Antilles 5: 204, *fig. 81.* 1989.

Robust herb 1–1.5 m tall, the stems hispid with retrorse hairs 3–4 mm long. Leaves 8–12 cm long, about as wide, deeply 3-5-lobed, the lobes narrow, linear to lanceolate, serrate, hispid above and beneath. Pedicels 5–7 cm long, retrorsely hispid; involucel of 8–10 linear bracts, caducous; calyx ca. 3 cm long, pubescent; petals 7–8 cm long, yellow. Capsules ovoid, apically acute, 6–7 cm long, dehiscent, appressed-hispid, the hairs 1–3 mm long; seeds squamose-striped, 4 mm long; $2n = 72$.

Cultivated and escaped, in disturbed areas and secondary vegetation; common in the Northern Highlands, Eastern Highlands, and Central Plateau; 300–1200 m; introduced from southeastern Asia. CHIAPAS COLLECTIONS: *Cz 2751* (XAL, pf); *F 3217* (pf); *G&H 432* (MICH); *Te 879* (MEXU); *T 364* (DS); *T 1587* (DS); *V 2420* (XAL, pf); *7250*; *7711*; *12880*; *28873*.

Said to be effective against poisonous snakes, the masticated seeds applied to the site of the bite. The seeds are also used as a coffee substitute.

2. ABUTILON

Abutilon Miller, Gard. Dict. Abridg. ed. 4. 23. 1754. —LECTOTYPE (Shuttleworth ex Gray, Pl. Wright. 1:21. 1852): *Sida abutilon* L. (≡*Abutilon theophrasti* Medikus).

Subshrubs or shrubs to small trees, glabrescent or pubescent, sometimes glandular-pubescent. Leaves elliptic, ovate, or cordiform, sometimes lobed or parted, usually crenate or dentate. Flowers axillary and solitary or aggregated into racemes or panicles, rarely in umbels; involucel absent; calyx lobes lanceolate, ovate, or cordate; petals often yellow or orange, less often white, lavender, or rose; anthers 20–100 or more; styles 5–30; stigmas capitate. Fruits schizocarpic (but sometimes pseudocapsular); mericarps 5–30, usually apically acute or acuminate to spinescent (rarely rounded), usually with 3–6 seeds each; seeds glabrous or slightly pubescent; $x = 7, 8$.

About 200 species from the Americas, Africa, Asia, and Australia, of which 45 occur in Mexico and 12 in Chiapas.

REFERENCES: STANDLEY, P. C. 1923. Trees and shrubs of Mexico—*Abutilon.* Contr. U.S. Natl. Herb. 23:748–756; KEARNEY, T. H. 1955. A tentative key to the North American species of *Abutilon.* Leafl. W. Bot. 7:241–254; FRYXELL, P. A. 1976. Mexican species of *Abutilon* sect. *Armata* (Malvaceae), including descriptions of three new species. Madroño 23:320–334.

a. Carpels with 4 or more ovules; calyx often > 2 cm long; petals 3.5 cm or more long, often long-clawed; plants sometimes arborescent.

b. Androecium included; petals pure yellow; mericarps rounded, 2.5 cm long .... 10. *A. purpusii*

bb. Androecium exserted; petals orange or yellow with red veins; mericarps rounded or cuspidate.

c. Plants pubescent; leaves simple, markedly discolorous; petals orange; androecium about twice length of petals; mericarps cuspidate, 2.5–3 cm long .... 12. *A. tridens*

cc. Plants glabrate; leaves deeply lobed; petals yellow with red veins; androecium slightly exserted; mericarps rounded, < 2 cm long .... 11. *A. striatum*

aa. Carpels 1–3-ovuled; calyx < 2 cm long; petals not more than 2 cm long; plants usually shrubs, seldom arborescent.

d. Calyx lobes cordate and overlapping, buds pentangular .... 9. *A. permolle*

dd. Calyx lobes ovate or lanceolate, buds rounded.

e. Styles and carpels 5–7.

f. Mericarps with divergent apical spines > 2 mm long; plants coarsely pubescent; leaves elliptic .... 5. *A. ellipticum*

ff. Mericarps acute, the apical beaks < 1 mm long; leaves ovate.

[g. Plants scandent with drooping branches, the stems pilose; petals 5–7 mm long; calyx 4 mm long .... 7. *A. orientale*]

gg. Plants erect, the stems finely puberulent or often viscid; petals 8–12 mm long; calyx 7–8 mm long .... 8. *A. percaudatum*

ee. Styles and carpels 8–12.

h. Mericarps 12–20 mm long, apically acute to acuminate, keeled dorsally; calyx divided almost to the base, the lobes narrowly lanceolate, fully reflexed in fruit; petals yellowish with diffuse basal spot .... 4. *A. divaricatum*

hh. Mericarps 5–13 mm long, apically rounded or acute, weakly or not at all keeled dorsally; calyx ⅓–⅔ divided, the lobes ovate or triangular, erect or spreading; petals yellow or orange, lacking basal spot.

i. Petals 5–10 mm long, yellow, spreading; stipules subulate, inconspicuous, deciduous; mericarps with endoglossum; leaves truncate to somewhat cordate, concolorous; inflorescence a branched or simple raceme .... 2. *A. barrancae*

ii. Petals 8–15 mm long, yellow or orange, often reflexed; stipules auriculate, prominent, becoming floral bracts in inflorescence, deciduous; endoglossum absent; leaves usually deeply cordate, discolorous; inflorescence racemose or paniculate.

j. Petals yellow, 9–15 mm long, slightly if at all reflexed; filaments 2–4 mm long; inflorescence racemiform; stems with simple hairs 1–2 mm long .... 3. *A. bracteosum*

jj. Petals orange, 8–12 mm long, manifestly reflexed; filaments 1–1.5 mm long; inflorescences paniculate; stems minutely stellate-pubescent.
    k. Mericarps short-puberulent (hairs 0.2–0.5 mm long), relatively blunt or acute apically; leaves (beneath) and stems with pubescence 0.2–0.5 mm long .... 1. *A. andrieuxii*
    kk. Mericarps long-hirsute (hairs 1–1.5 mm long), acuminate; leaves (beneath) and stems with whitish puberulence ca. 0.1 mm long .... 6. *A. haenkeanum*

1. **Abutilon andrieuxii** Hemsley, Diagn. Pl. Nov. Mexic. 24. 1879.

—Type: Mexico, Oaxaca, Tlacolula, *Andrieux 522* (K!; isotypes: G as photograph F—23764! K! OXF!).

Abutilon reticulatum Rose, Contr. U.S. Natl. Herb. 5:171. 1899. —Lectotype (Fryxell, Syst. Bot. Monogr. 25:31. 1988): Mexico, Oaxaca, Monte Alban, 23 Nov 1894, *Pringle 6062* (US!; isolectotypes: BR! F! as photograph F—56132! GOET! K! MASS! MEXU! MICH! MO! MSC! PH! UC! VT! pf!).

Abutilon calderonii Standley, J. Wash. Acad. Sci. 14:99. 1924. —Type: El Salvador, San Salvador, 1923, *Calderón 1639* (US!).

Illustrations: Fryxell, 1976:333, *fig. 5, A–D.*

Robust shrub 2–5 m tall, often with several trunks, the herbage minutely puberulent, with glandular hairs in the inflorescence. Leaves long-petiolate, deeply cordate, orbicular to ovate, acuminate, obscurely serrate; stipules broadly foliar, auriculate-clasping, asymmetrical, deciduous. Inflorescence an ample terminal panicle; flowers subtended by floral bracts of stipular origin, these prominent, caducous; calyx 5–8 mm long, spreading in fruit; petals orange, reflexed, 8–14 mm long; staminal column densely pubescent, the filaments short, crowded at the apex; styles ca. 10, slender, reddish. Fruits 8–10 mm long, pubescent, the mericarps rounded to acute apically; seeds 2 mm long, blackish, sparsely pubescent; $2n = 14$; Nov–Mar.

Often on steep slopes and in ravines, or in understory of Tropical Deciduous Forest, Thorn Woodland, and Seasonal Evergreen Forest; common in the Central Depression and the dryer inland slopes of the Sierra Madre; 550–1700 m. Mex. (Oax., Chis.), Guat., Hond., Salv. Chiapas Collections: *F 894* (ARIZ, BH, CTES, L, MEXU, pf); *F 901* (BH, CAS, CTES, pf); *S 1911* (CAS, DS); *T 3909* (DS, MO, pf); *T 3772* (DS, F, MO, pf); *23727*; *30590*; *58363*.

2. **Abutilon barrancae** M. E. Jones, Contr. W. Bot. 18:57. 1933.

—Type: Mexico, Jalisco, Guadalajara, La Barranca, 19 Nov 1930, *Jones 27162* (POM!; isolectotypes: BM—2! NY! POM! UC!).

Wissadula scabra K. Presl, Reliq. Haenk. 2:117. *t.69.* 1835. —*Pseudabutilon scabrum* (K. Presl) R. E. Fries, Kongl. Svenska Vetenskapsakad. Handl. 43(4):103. 1908 (non *Abutilon scabrum* S. Watson, 1889).—Type: Mexico, without locality, *Haenke s.n.* (PR).

Wissadula paniculata Rose, Contr. U.S. Natl. Herb. 5:178. 1899. —*Pseudabutilon paniculatum* (Rose) R. E. Fries, Kongl. Svenska Vetenskapsakad. Handl. 43(4):104. 1908 (non *Abutilon paniculatum* Hand.-Mazz., 1933). —Type: Mexico, Sinaloa, Ymalá, 25 Sep–3 Oct 1891, *Palmer 1743* (US!; isotypes: BM! NY!).

Pseudabutilon inornatum Standley & Steyerm., Publ. Field Mus. Nat. Hist., Bot. Ser. 23:15. 1943. —Type: Guatemala, near Amatitlán, 29 Dec 1938, *Standley 61425* (F! as photograph F—56243!; isotype: US!).

Illustrations: Kongl. Svenska Vetenskapsakad. Handl. 43(4): *pl. 7, figs. 19–20.* 1908; K. Presl, Reliq. Haenk. *pl. 69.* 1835.

Shrub 1–2(–3) m tall, minutely stellate-pubescent, the older branches becoming glabrate with gray to reddish-brown bark. Leaves long-petiolate, ovate, truncate to somewhat cordate, obscurely serrate, acute to acuminate. Inflorescence racemiform or paniculate, simple or more often branched; flowers short-pedicellate or subsessile; calyx 3–6 mm long, ca. half-divided, basally rounded enclosing the base of fruit, with triangular lobes; petals yellow, 5–10 mm long; staminal column sparsely pubescent to glabrous, the filaments almost as long as the column; styles ca. 10, slender, pallid. Fruits 4–6 mm long, stellate-pubescent, the mericarps rounded to acute apically, with endoglossum; seeds 2 mm long, reddish-brown, papillate; Oct–Dec.

In the understory of Tropical Deciduous Forest and occasionally Seasonal Evergreen Forest, often along ravines; common in the Central Depression and the adjoining margins of the Sierra Madre and Central Plateau; 570–1100 m. Mex. (Son., Sin., Dgo., Jal., Ver., Gro., Oax., Chis.), Guat., Hond. Chiapas Collections: *F 895* (BH, CTES, pf); *F 3236* (BM, CHAPA, CTES, DS, ENCB, F, MEXU, MO, pf); *F 3373* (CHAPA, DS, ENCB, MEXU, MO, pf); *La 282* (DS, pf); *20401*; *24637*; *30546*; *30570*; *41774*; *47034*; *56295*.

3. **Abutilon bracteosum** Fryx., Brittonia 32:262. 1980.

—Type: Mexico, Oaxaca, Mpio. San Pedro Mixtepec, 6 km al N de Puerto Escondido sobre la terracería a San Gabriel Mixtepec, 140 m, 22 Nov 1978, *Koch and Fryxell 78408* (CHAPA!; isotypes: CTES! ENCB! MICH! NY! pf!).

Illustration: none found.

Shrubs to 2 m tall, the stems sparsely hirsute, more densely so at base of petioles. Leaves petiolate (the petioles progressively shorter upwards), cordate, ovate, almost as broad as long, remotely and shallowly denticulate, acuminate, stellate-pubescent beneath, with appressed simple hairs above; stipules sessile, falcate to auriculate-clasping, foliar, apically laciniate, 8–20 mm long, 5–10 mm broad, becoming paired floral bracts in the inflorescence, enclosing the buds. Inflorescence an interrupted raceme surpassing the leaves; pedicels 3–20 mm long; calyx 9–13 mm long, deeply 5-lobed, minutely stellate-puberulent and prominently ciliate; petals yellow-orange, 9–15 mm long, slightly reflexed; staminal column 5–7 mm long, pallid, more or less stellate-pubescent; anthers yellowish, ca. 50; styles 10–11, slender, pale greenish with purplish capitate stigmas. Fruits minutely and evenly stellate-pubescent; mericarps 10–11, rounded-acute, 8–9 mm tall; Oct–Dec.

Along streams in Tropical Deciduous Forest and Seasonal

Evergreen Forest; uncommon in the NW portion of the Sierra Madre and adjoining portion of the Central Depression; 970–1000 m. Mex. (Cma., Gro., Oax., Chis.). Chiapas Collections: *Cro 46277* (MO); *44442*; *60273*.

4. **Abutilon divaricatum** Turcz., Bull. Soc. Imp. Naturalistes Moscou 31:204. 1858.

—Lectotype (Fryxell, 1976:327): Mexico, Veracruz, Mirador, 1840, *Galeotti 4071* (KW!; isolectotypes: BR! G as photograph F—23765! K!).

Abutilon chiriquinum Robyns, Ann. Missouri Bot. Gard. 52: 574. 1966. —Type: Panamá, Chiriquí, vicinity of El Boquete, 3 Feb–15 Mar 1938, *Bro. Maurice 705* (US!; isotype: MO!).

Illustrations: Fryxell, 1976:328, *fig. 3, D–G.*

Shrubs 2–3 m tall, usually pilose with simple hairs 1–2 mm long and smaller stellate hairs. Leaves long-petiolate, ovate, deeply cordate, serrate, acuminate, slightly discolorous, pubescent above and beneath, more densely so beneath. Inflorescence a terminal panicle; calyx divided nearly to the base, 4–8 mm long, the lobes narrowly lanceolate, fully reflexed in fruit; petals 7–9 mm long, pale yellow, sometimes with diffuse spot at base, sometimes reflexed; staminal column densely pubescent basally. Fruits 12–20 mm long, hirsute, the 8–12 mericarps prominently keeled, basally rounded, apically acute; seeds 2 mm long, blackish, essentially glabrous.

Forest margins of Pine-Oak and Pine-Oak-Liquidambar Forests; rare in the Northern Highlands and Sierra Madre; 1600 m. Mex. (Ver., Chis.), Guat., Hond., Nic., C.R., Pan. Chiapas Collections: *EM 1919* (MEXU); *8984*.

In Mexico *Abutilon divaricatum* subsp. *divaricatum* occurs in Veracruz and Chiapas. *Abutilon divaricatum* subsp. *hintonii* Fryx. (lacking pilose hairs) occurs in the state of Mexico.

5. **Abutilon ellipticum** Schldl., Linnaea 11:368. 1837.

—*Sida elliptica* (Schldl.) Steudel, Nom. ed. ii. 577. 1840. —Type: Mexico, [Michoacán:] Tlalpujahua, 1830, *Keerl s.n.* (HAL; isotype: BR!).

Abutilon attenuatum Robinson & Seaton, Proc. Amer. Acad. Arts 28:104. 1893. —Type: Mexico, Jalisco, near Lake Chapala, 21 Nov 1892, *Pringle 4354* (GH?; isotypes: BM! BR! F! GOET! K! MASS! MEXU! MIN! MO! MSC! MU! NY! PH! UC! US! VT! pf!).

Abutilon membranaceum E. G. Baker ex Rose, Contr. U.S. Natl. Herb. 3:312. 1895. —Type: Mexico, Nayarit, Tepic, 5 Jan–6 Feb 1892, *Palmer 1959* (BM!; isotypes: F! GH! NY! US!).

Abutilon hemsleyanum Rose, Contr. U.S. Natl. Herb. 10: 123. 1906. ≡*Abutilon sidoides* Hemsley, Diagn. Pl. Nov. Mexic. 2:24. 1879 (non Dalz. & Gibson, 1861). —Type: Mexico, San Luis Potosí, 1878, *Parry and Palmer 89* (K!; isotypes: BM! NY! US!).

Illustration: none found.

Shrubs 1–2(–3) m tall, stellate-pubescent, erect. Leaves ovate or elliptic, truncate, serrate, acute or acuminate, about twice as long as wide, more or less discolorous. Inflorescences terminal panicles or dense racemes; calyx 6–8 mm long, pubescent, basally rounded; petals yellow or yellow-orange, 8–15 mm long; staminal column basally pubescent, the anthers yellowish. Fruits pubescent, the 5–7 mericarps with long (1–4 mm) divergent apical spines; seeds ca. 2 mm long, blackish, minutely squamose; $2n = 16$.

Pine-Oak and Pine-Oak-Liquidambar Forests; uncommon in the Central Plateau and the Sierra Madre; 1500–2000 m. Mex. (Tam., Sin., Dgo., Zac., S.L.P., Nay., Jal., Aguasc., Qro., Hgo., Mich., Méx., D.F., Mlos., Pue., Gro., Oax., Chis.), Guat. Chiapas Collections: *García 594* (CHAPA, pf); *EM 87* (MEXU); *EM 1905* (DS, F); *T 409* (DS); *49810*.

6. **Abutilon haenkeanum** K. Presl, Reliq. Haenk. 2:115. 1835.

≡*Sida presliana* D. Dietr., Syn. Pl. 4:856. 1847. —Type: Mexico, "in terris mexicanis occidentalibus," *Haenke s.n.* (PR!; isotypes: BM! MICH! MO! PR! W as photograph F—32631!).

Illustration: Fryxell, 1976:333, *fig. 5E.*

Shrubs or rarely small trees 2–3(–6) m tall, the stems softly and minutely stellate-puberulent. Leaves long-petiolate, deeply cordate, broadly ovate, obscurely serrate, acuminate, discolorous, softly puberulent; stipules prominent and foliaceous, early deciduous, sessile, asymmetrically auriculate, acuminate. Inflorescence an ample terminal panicle; calyx 6–10 mm long (ca. half length of fruit), hirsute, the hairs 0.5–1 mm long, more than half-divided, the lobes lanceolate-acute; petals orange, 6–9 mm long, somewhat fleshy, more or less reflexed; staminal column pallid, stellate-pubescent at least at base, the filaments 1–1.5 mm long, the anthers usually purplish; styles 8–10, slightly exceeding androecium, the stigmas capitate. Fruits blackish, prominently hirsute, the hairs 1–1.5 mm long; mericarps 8–10, apically acuminate, ca. 1 cm long; seeds 2 mm long, minutely verruculate; Dec–Jun.

Forest margins of Tropical Deciduous Forest and secondary growth vegetation; rare on the Pacific Coastal Plain; 200–500 m. Mex. (Sin., Nay., Cma., Mlos., Gro., Chis.). Chiapas Collections: *EM 16340* (MEXU).

7. **Abutilon orientale** Standley & Steyerm., Publ. Field Mus. Nat. Hist., Bot. Ser. 23:173. 1944.

—Type: Guatemala, Dept. Zacapa, between Agua Blanca and Chiquimula, 350–500 m, 15 Oct 1940, *Standley 74420* (F!).

Abutilon demissum Fryx., Brittonia 32:263. 1980. —Type: Mexico, Oaxaca, Mpio. de Pochutla, 1–2 km al oeste de Puerto Angel, 50 m, 22 Nov 1978, *Koch and Fryxell 78402* (CHAPA!; isotypes: BH! BM! CAS! CTES! ENCB! F! K! MEXU! MO! NY! TEX! WIS! pf!).

Illustration: none found.

Subshrubs, procumbent or scandent, the branch tips commonly drooping, the stems with simple hairs 1–2 mm long interspersed with minute stellate hairs. Leaves petiolate, cordate, ovate, crenate, acuminate, up to 13 cm long, minutely and evenly stellate-pubescent above and beneath. Peduncles usually solitary in the leaf axils, 4–15 mm long; calyx 4 mm long, cupuliform and tightly enclosing the base of the fruit; petals yellow, 5–7 mm long, rotate. Fruits 5–6 mm long, minutely stellate-pubescent or with glandular hairs; mericarps 5–6, apically acute, with endoglossum internally; seeds ca. 1.6 mm long, blackish, minutely papillate; Oct–Nov.

In Tropical Deciduous Forest; rare on the Pacific Coastal Plain; 0–400 m. Mex. (Sin., Jal., Cma., Oax.), Guat. Chiapas Collections: none (collected within 4 km of Chiapas state line NW of Arriaga (*Fryxell & Lott 3376*)—definitely to be expected in Chiapas).

8. **Abutilon percaudatum** Hochr., Annuaire Conserv. Jard. Bot. Genève 21:438. 1920.

—Type: Mexico, San Luis Potosí, Rioverde, 2–8 Jun 1904, *Palmer 19* (NY!; isotypes: CM! F! GH! K! MO! US!).
Illustration: none found.

Widely branched shrubs with glandular pubescence, the stems terete. Leaves ovate, deeply cordate, crenate, acuminate, very sparsely pubescent above and beneath, the petioles viscid; stipules subulate, inconspicuous. Flowers solitary or in lax panicles, the pedicels 2–4 cm long, slender; calyx 6–8 mm long, half-divided, yellowish at base, enclosing base of fruit, the lobes somewhat spreading; petals yellowish with maroon spot at base, 8–15 mm long; staminal column purplish, the anthers orange; styles 5, pallid, slender; stigmas capitate, purplish. Fruit 9–12 mm long, minutely puberulent (viscid?), loculicidally dehiscent (septicidal dehiscence almost completely suppressed), the mericarps apically acute; seeds 2.8 mm long, dark brown, minutely scabridulous; $2n = 28$; Oct–Jan.

In second growth and margins of Tropical Deciduous Forest; rare on the Central Plateau; 1000 m. Mex. (S.L.P., Hgo., Ver., Oax., Chis.). C.R. Chiapas Collections: *T 3144* (DS, F, MO, pf).

9. **Abutilon permolle** (Willd.) Sweet, Hort. Brit. 53. 1826.

—*Sida permolle* Willd., Enum. Pl. Hort. Reg. Berol. 728. 1809. —Type: Hort. Bot. Berol. (B—herb. Willdenow no. 12689; as photograph F—9794!).

Abutilon peraffine Shuttlew. ex A. Gray, Smithsonian Contr. Knowl. 3(art. 5, Pl. Wright., part 1):20. 1852. —Type: United States, Florida, Key West, Feb 1846, *Rugel 95b* (isotypes: BM! pf!).
Illustration: none found.

Shrubs 1–2 m tall, softly stellate-pubescent. Leaves ovate, deeply cordate, serrate, acuminate, more or less discolorous, densely whitish-pubescent beneath, sparsely pubescent above. Flowers solitary in the axils or in terminal panicles, long-pedicellate; calyx 1–1.5 cm long, soft-puberulent, ca. ⅔ divided, the lobes lance-ovate, the bases of the lobes overlapping and plicate in bud; petals yellow or yellow-orange, 10–18 mm long; androecium pallid, glabrous; styles 10–12, slender, pallid; fruits hirsute, about equaling the calyx, loculicidally dehiscent (the carpels separating tardily); mericarps apically acute; seeds 2 mm long, blackish, papillate; Dec–Jun.

On the margins of Evergreen Seasonal Forest or in Thorn Woodland, often in disturbed situations and on limestone substrates; uncommon in the Northern Highlands and Central Depression; 560–1200 m. U.S., Mex. (Camp., Yuc., Q.Roo, Chis.), Guat., Bel., Antill. Chiapas Collections: *24178*; *30528*; *48964*; *48979*.

10. **Abutilon purpusii** Standley, Contr. U.S. Natl. Herb. 23:750. 1923.

—Type: Mexico, Veracruz, Barranca de Tenampa, Zacualpán, Jan 1910, *Purpus 4332* (US!; isotypes: BM! F! GH!).
Illustration: none found.

Shrubs or small trees 2–6 m tall, the stems densely stellate-pubescent. Leaves ovate, cordate with an open sinus, serrate-crenate, acuminate, minutely stellate-pubescent beneath, very sparsely so above. Flowers axillary, solitary, long-pedicellate; calyx 1.5–2.5 cm long, minutely stellate-pubescent, basally brownish, ca. ½–⅔ divided; petals clear yellow, (2.5–)4 cm long, with long glabrous claws; staminal column 2.5 cm long, glabrous, pallid, the filaments apical, 5–7 mm long. Fruits 2–2.5 cm long, subglobose, minutely stellate-pubescent, blackish at maturity, the mericarps apically blunt, ca. 6-seeded; seeds 3 mm long, short-pubescent; $2n = 16$; Nov–Apr.

In Seasonal Evergreen Forest and Pine-Oak Forest, sometimes in disturbed areas; uncommon in the Sierra Madre; 750–1000 m. Mex. (Tam., S.L.P., Hgo., Pue., Ver., Oax., Chis.), Guat. Chiapas Collections: *EM 85* (US); *EM 18609* (DS); *T 3612* (DS, F, LL).

11. **Abutilon striatum** Dickson ex Lindley, Bot. Reg., App. 39. 1839.

—*Sida striata* (Dickson ex Lindley) D. Dietr., Syn. Pl. 4: 852. 1847. —Type: Dickson in Maund, The Botanist 3:*t. 144.* 1839.

Abutilon venosum Lemaire, Fl. Serres Jard. Eur. 2(3):*t.5.* 1846. —Type: *pl. 5,* Fl. Serres Jard. Eur., 1846.

Abutilon thompsonii André, Rev. Hortic. Belge Etrangère 11: 7. 1885. —Type: plate.

Illustrations: Maund, loc. cit. *pl. 144.* 1839; Paxton's Mag. Bot. 7:53–54. 1840; Hooker, Bot. Mag. 67:*pl. 3840.* 1841; Lemaire, loc. cit. *pl. 5.* 1846; Martius, Fl. Bras. 12(3):*pl. 76.* 1891; Herter, Fl. Ilus. Uruguay, fasc. 13, *figs. 2115, 2117.* 1957; Camargo, Cat. Ilus. Pl. Cundinamarca 4:151. *fig. 52.* 1969; Molinari, Publ. Inst. Bot. Agric. [Buenos Aires] 7(fasc. 124):20, *fig. 3.* 1965.

Shrubs or small trees 2–4 m tall, nearly glabrous. Leaves long-petiolate, palmately 3–5-lobed, the lobes constricted at sinus, serrate, acuminate, glabrous above and beneath; stipules broadly subulate, ca. 1 cm long, 1–2 mm wide. Flowers long-pedunculate, solitary (or paired) in the axils; calyx minutely stellate-pubescent, 2.5–3.5 cm long, half-divided, more or less prominently nerved; petals 3.5–4.5 cm long, with long glabrous claws, yellow with prominent dark red reticulate venation; androecium slightly exceeding the petals, the column glabrous, pallid, the anthers yellow-orange. Fruit ca. 1.5 cm long, subglobose, minutely stellate-pubescent, the mericarps ca. 10, apically rounded, several-seeded; $2n = 16$.

Native to Brazil and perhaps elsewhere in South America, *Abutilon striatum* is widely cultivated as an ornamental and occasionally naturalized in many parts of the tropical and subtropical Americas. In Chiapas and elsewhere in Mexico it occurs as a garden subject and is sometimes naturalized. Chiapas Collections: *Cz et al. 3695* (XAL, pf); *F 3204* (CHAPA, DS, ENCB, MEXU, pf); *24421*.

12. **Abutilon tridens** Standley & Steyerm., Publ. Field Mus. Nat. Hist., Bot. Ser. 23:173. 1944.

—Lectotype (Fryxell, Syst. Bot. Monogr. 25:63. 1988): Guatemala, El Progreso, between Finca Piamonte and the slopes southeast along a small creek, *Steyermark 43439* (F!; isotype: F!).

Illustration: Fig. 1; Fryxell, Syst. Bot. Monogr. 25:64. *fig. 9.* 1988.

Shrubs 2–4 m tall, more or less densely pubescent. Leaves long-petiolate, ovate, deeply cordate, subentire, acuminate, markedly discolorous, sparsely pubescent above, densely canescent beneath. Flowers solitary in the axils, long-pedunculate (overtopping the foliage); calyx 1.5–2 cm long, densely brown-pubescent, half-divided, prominently nerved; petals orange, 3–3.5 cm long, forming tubular corolla; androecium exserted, about twice length of corolla, the filaments slender, 5–7 mm long; styles 10–13, exceeding androecium, the stigmas purplish. Fruits 3–3.5 cm long, as broad or broader, stellate-pubescent, apically truncate with crown of divergent spines; seeds 4 mm long, minutely pubescent; Nov–Mar.

In Evergreen Cloud Forest and Pine-Oak Forests, occasionally in secondary vegetation; uncommon in the Central Plateau and Sierra Madre; 1300 to 2500 m. Mex. (Chis.), Guat. Chiapas Collections: *La 426* (DS); *EM 1592* (MICH); *T 4155* (MEXU); *9384*; *46240*; *48860*.

3. ALCEA

Alcea L., Sp. Pl. 687. 1753; Gen. Pl. ed. 5. 307. 1754. —Lectotype (Hitchcock and Green, 1929): *Alcea rosea* L.

Mostly erect annual, biennial, or perennial herbs, with stellate pubescence, sometimes mixed with long simple hairs, sometimes glabrate. Leaves ovate to suborbicular, angled, weakly lobed, or deeply palmately parted, crenate or dentate, acute to obtuse; foliar nectaries absent. Inflorescence racemiform or spiciform, usually leafless; involucel shorter than to equaling calyx, 5–11-parted, connate below; calyx more or less pubescent to tomentose; petals > 3 cm long and showy, apically notched, pink, white, purple, or yellow, spreading to form a rotate corolla; androecium included, glabrous, usually pallid and compact; styles 15 or more, slender. Fruit a disk-shaped schizocarp of > 15 mericarps; mericarps laterally compressed and circular with a prominent ventral notch, indehiscent, glabrous or pubescent, variously smooth, wrinkled, winged, or furrowed; seeds solitary, glabrous or pustulate; $x = 21$.

A genus of the Middle East and southwestern Asia of about 60 species, one of which (the hollyhock or palo de San José, *Alcea rosea*) has become cosmopolitan in cultivation.

References: Zohary, M. 1963. Taxonomical studies in *Alcea* of southwestern Asia. Part I. Bull. Res. Council Israel, Sect. D, Bot. 11:210–229; Part II. Israel J. Bot. 12:1–26; Riedl, I. 1976. *Alcea. In:* Flora Iranica, lfg. no. 120, pp. 41–80, tab. 8–55.

1. Alcea rosea L., Sp. Pl. 687. 1753.

—*Althaea rosea* (L.) Cav., Diss. 2:91. 1786. —Type: "rosea 1" ex Hort. Upsal. (LINN—869.1, as microfiche!).

Illustrations: New Britton and Brown, Ill. Fl. N. U.S. 2:525. 1968; Steyermark, Fl. Missouri *pl. 250.* [no date]; Bailey, Stand. Cycl. Hort. 2:1497, *fig. 1844, pl. 55.* 1939; Herter, Fl. Ilus. Uruguay, fasc. 13. *fig. 2127.* 1957; Curtis, Bot. Mag. *plates 892, 1916, 3198*; Molinari, Publ. Inst. Bot. Agric. [Buenos Aires] 7(fasc. 124):35, *fig. 11.* 1965; Fryxell, Syst. Bot. Monogr. 25:69. *fig. 10.* 1988; Fl. Lesser Antilles 5: 204. *fig. 83.* 1989.

Biennial herb, 1–2.5 m tall (or dwarf forms smaller), more or less stellate-pubescent. Leaves long-petiolate, orbicular to 5–7-angled, crenate, roughly pubescent. Inflorescence spiciform, leafless, terminal; flowers showy, subsessile; involucel of 6–7 broadly triangular bracts; calyx tomentose, exceeding the involucel; corolla 8–10 cm diameter, sometimes double, in a wide variety of colors; styles 20–40. Fruits disciform, pubescent, enclosed by calyx; mericarps 20–40, horseshoe-shaped, dorsally channeled and winged; $2n = 42$.

Few herbarium specimens from Chiapas have been seen, but *Alcea rosea* is often found growing in gardens in Chiapas as a cultivated ornamental. Chiapas Collections: *16045*.

4. ALLOSIDASTRUM

Allosidastrum (Hochr.) Krapov., Fryx. & D. Bates, Syst. Bot. Monogr. 25:70. 1988. —*Pseudabutilon* subg. *Allosidastrum* Hochr., Annuaire Conserv. Jard. Bot. Genève 20:118. 1917. —Type: *Pseudabutilon smithii* Hochr. (=*Allosidastrum interruptum* (DC.) Krapov., Fryx. & D. Bates).

Shrubs 1–3 m tall with pubescence of both stellate and simple hairs, sometimes viscid. Leaves ovate, truncate, or cordate, crenate-serrate, acuminate; petioles usually half length of blade or more. Flowers in terminal panicles or racemes; involucel absent; calyx twisted in bud, the tips of the acuminate lobes divergent; petals white to yellow, with or without dark basal spot. Fruits of 5–9 mericarps; mericarps essentially indehiscent, more or less rounded dorsally, with relatively fragile walls lacking ornamentation, with or without an apical beak, usually with a rudimentary endoglossum; seeds solitary, glabrous; $x = 7$.

Allosidastrum includes four species from tropical America, of which three occur in Chiapas.

Reference: Krapovickas, A., P. A. Fryxell and D. M. Bates. Un género nuevo de Malvaceae de los neotrópicos: *Allosidastrum*. Bol. Soc. Bot. México 48:23–34. 1988 [1989].

[a. Inflorescence an interrupted raceme, sometimes branched; floral bracts frequently > 1 mm wide; fruits of (7–)8–9 mericarps with short divergent spurs around a central depression .... 2. *A. interruptum*]

aa. Inflorescence a much-branched terminal panicle; floral bracts narrowly linear; fruits of 5–7 mericarps.

b. Petals yellow with prominent basal spot; calyx 6–8 mm long, with both stellate pubescence and simple hairs 1–1.5 mm long; staminal column 2 mm long, densely scabrid (hairs 0.5 mm), the filaments (and styles) often dark-pigmented; fruit beakless, of 6–7 mericarps, the dorsal wall of each mericarp flattened .... 1. *A. hilarianum*

bb. Petals white or pale yellow throughout (or rarely with spot at base); calyx 3–5 mm long, stellate-pubescent (hairs 0.5 mm long); staminal column 1.5 mm long, sparsely stellate-pubescent (hairs 0.1–0.2 mm), the filaments pallid; fruit beaked, of 5–6(–7) mericarps, the dorsal wall of each mericarp rounded (the fruit thus lobed) .... 3. *A. pyramidatum*

1. **Allosidastrum hilarianum** (K. Presl) Krap., Fryx. & D. Bates, Syst. Bot. Monogr. 25: 71. 1988.

—*Sida hilariana* K. Presl. Reliq. Haenk. 2:107. 1835 (non Walpers, 1842). —Lectotype (Fryxell, Syst. Bot. Monogr. 25:71. 1988): Mexico, "in parte occidentali Mexici," *Haenke s.n.* (PR!; isotypes: BM! LE! MO! PR!).

Sida kunthiana K. Presl., Haenk. 2:106. 1835. —Type: Mexico, Acapulco, *Haenke s.n.* (PR!; isotypes: MO! PR! W, as photograph F—32640!).

Sida glanduligera Benth., Bot. Voy. Sulphur 69. 1844. —Type: Nicaragua, El Realejo, *Sinclair s.n.* (K!).

Sida cinerea E. G. Baker ex Rose, Contr. U.S. Natl. Herb. 3:311. 1895. —Type: Mexico, Nayarit, Tepic, 5 Jan–6 Feb 1892, *Palmer 1835* (BM!; isotypes: BM! F! GH! K! NY! US!).

Pseudabutilon langlassei Hochr., Annuare Conserv. Jard. Bot. Genève 20:120. 1917. —Type: Mexco, Guerrero, rives du Río Tecpan, 28 Jan 1899, *Langlassé 817* (G as photograph F—23753!; isotypes: G, K! P, US!).

Illustration: **Fig. 2**; Fryxell, Syst. Bot. Monogr. 25: 72. *fig. 11.* 1988; Krapovickas et al., Bol. Soc. Bot. México 48:29. *fig. 3.* 1988.

Shrubs to 2.5 m tall, the stems minutely stellate-puberulent, also in inflorescence with long simple hairs (0.5–1.5 mm long) and glandular hairs. Leaves broadly ovate, truncate, serrate, acuminate, glabrate above, minutely stellate-puberulent beneath, essentially concolorous. Flowers in terminal panicles, with linear stipuliform floral bracts < 1 mm wide; calyx 6–8 mm long, with stellate hairs and long simple hairs 1–2 mm long; petals 5–8 mm long, yellow with a conspicuous red spot at base; staminal column scabrid, the filaments purplish. Fruits oblate, 5 mm diameter, beakless, of 6–7 mericarps, apically stellate-pubescent, each mericarp in form of semicircular wedge, with relatively flat dorsal walls; seeds 1.5 mm long; $2n = 14$; Oct–Mar.

In canyons and on hillsides in Seasonal Evergreen Forest, Pine-Oak Forest, and Tropical Deciduous Forest; uncommon in Central Depression and Sierra Madre; 400 to 1300 m. Mex. (Son., Sin., Dgo., Nay., Jal., Cma., Méx., Mich., Pue., Ver., Gro., Chis.), Guat., Salv., Nic., C.R. Chiapas Collections: *EM 17356* (K); *Mi 5959* (MEXU); *56893*; *60278*; *70357*.

2. **Allosidastrum interruptum** (Balbis ex DC.) Krapov., Fryx. & D. Bates, Syst. Bot. Monogr. 25:71. 1988.

—*Sida interrupta* Balbis ex DC., Prodr. 1:464. 1824. —Type: Colombia, "Sanctae Martae," *Bertero s.n.* (G as photograph F—7997!; isotypes: F! US!).

Pseudabutilon smithii Hochr., Annuaire Conserv. Jard. Bot. Genève 20:119. 1917. —Type: Colombia, Santa Marta, *Smith 489* (G; isotypes: A! BM! BR! F! GH! K! MICH! PH! US!).

Illustration: none found.

Subshrub 1–1.5 m tall, little branched; stems minutely scurfy-puberulent to glabrate. Leaves petiolate, truncate or slightly cordate, broadly ovate, crenate-dentate, acuminate, minutely and obscurely pubescent. Inflorescence an interrupted raceme or panicle; flowers 1–4 in axillary glomerules; pedicels 1–5 mm long; floral bracts lance-linear, often > 1 mm wide; calyx 4–6 mm long, densely stellate-puberulent; petals yellow, 4–5 mm long. Fruits oblate, 4–5 mm diameter, of 8–9 mericarps, minutely stellate-pubescent, with a ring of short spurs around a central depression; seeds, ca. 1.8 mm long; Oct–Mar.

In Tropical Deciduous Forest; rare on the Pacific Coastal Plain; 0 to 200 m. Mex. (Jal., Mich., Oax.), Nic., S.A. (Col.). Chiapas Collections: none (collected within 4 km of Chiapas state line near Arriaga (*Fryxell and Lott 3377*); definitely to be expected in Chiapas).

3. **Allosidastrum pyramidatum** (Cav.) Krap., Fryx. & D. Bates, Syst. Bot. Monogr. 25:74. 1988.

—*Sida pyramidata* Cav., Diss. 1:11. *t.1.f.10.* 1785; 6:*t. 194.f.1.* 1788. —Type: Santo Domingo, *Desportes s.n.* (P—JU no. 12272, as microfiche!).

Sida dumosa Swartz, Fl. Ind. Occ. 1:101. 1788. —Type: Jamaica, *Swartz s.n.* (S!; isotypes: B—herb. Willdenow no. 12713 as microfiche! BM!).

Sida leiophylla Sprengel, Syst. Veg. 3:121. 1826. —Type: "Portorico," *Bertero s.n.* (B—?).

Sida dumosa Swartz var. *fendleri* E. G. Baker, J. Bot. 30: 296. 1892. —Type: Venezuela, prope coloniam Tovar, 1854–1855, *Fendler 70* (K!; isotype: GH!).

Illustration: Cavanilles, loc. cit.

Shrubs ca. 2 m tall, the stems minutely stellate-puberulent. Leaves long-petiolate, broadly ovate, truncate to somewhat cordate, serrate or crenate, acuminate, minutely stellate-puberulent above and beneath to glabrate above, essentially concolorous. Flowers in terminal panicles, with reduced leaves and linear stipuliform bracts; calyx 3–5 mm long, with stellate hairs and sometimes short glandular hairs; petals 4–5 mm long, yellow throughout (rarely with red spot at base); staminal column pubescent, pallid throughout. Fruits oblate, beaked, lobulate, of 5–6 mericarps, stellate-pubescent, the mericarps with rounded dorsal walls; seeds 1.2 mm long, glabrous; $2n = 14$; Nov–Apr.

In Tropical Rain Forest, Seasonal Evergreen Forest, Tropical Deciduous Forest, and Short-Tree Savanna, also in disturbed areas; uncommon in Northern Highlands, Eastern Highlands, Central Depression, and Sierra Madre; 300 to 700 m. Mex. (Tam., S.L.P., Jal., Pue., Ver., Gro., Oax., Q.Roo, Chis.), Guat., Bel., Hond., Salv., Nic., C.R., Pan., Antill., S.A. (Col., Ven., Sur.). Chiapas Collections: *EM 2697* (DS, K, MO, UC); *S&S 1924* (US); *T 3189* (DS, MO, pf); *32573*; *33984*; *54540*.

5. ANODA

Anoda Cav., Diss. 1:38. 1785. —Type: *Anoda hastata* Cav.

Annual or perennial herbs or subshrubs, erect or decumbent, hispid or stellate-pubescent or -puberulent to glabrate. Leaves linear, lanceolate, ovate, cordate, hastately lobed or palmately divided, crenate or dentate to subentire, usually green, sometimes with an irregular purplish blotch along midvein, sometimes canescent beneath. Flowers solitary in the axils or aggregated in open apical panicles; involucel absent; calyx gamosepalous, 5-lobed, sometimes accrescent in fruit, basally rounded, usually 5–10-nerved; petals yellow, whitish, lavender, or purple; androecium shorter than to equaling petals, yellowish; styles slender, 5–20, the stigmas capitate. Fruit an oblate or disk-like schizocarp, puberulent to hispid; mericarps with or without a spur or spine at dorsal angle, the lateral walls usually disintegrating at maturity; seeds glabrous or pubescent, solitary, sometimes enclosed in persistent reticulate endocarp; $x = 15$.

A predominantly Mexican genus of 23 species, a few of which also occur in the southwestern United States, and two of which occur from the United States southward, through Central America to parts of South America.

Reference: Fryxell, P. A. 1987. Revision of the genus *Anoda* (Malvaceae). Aliso 11:485–522.

a. Mericarps apically dehiscent, lacking spur or spine on dorsal angle, the lateral walls disintegrating but leaving a persistent coarse reticulum .... 6. *A. pristina*
aa. Mericarps indehiscent, usually with a spur or spine on the dorsal angle, the lateral walls evanescent.
  b. Corolla yellow .... 3. *A. crenatiflora*
  bb. Corolla lavender or purple.
    c. Upper leaf surface stellate-pubescent; fruits stellate-pubescent .... 5. *A. guatemalensis*
    cc. Upper leaf surface with appressed simple hairs; fruits usually hispid.
      d. Plants erect; petals (20–)25–30 mm long .... 2. *A. albiflora*
      dd. Plants decumbent to ascending; petals seldom more than 23 mm long.
        e. Mericarps with a horizontal dorsal spine 1–4 mm long, the suture between mericarps sunken; lower leaves tending to be triangular to hastately lobed .... 4. *A. cristata*
        ee. Mericarps with dorsal spur absent or vestigial (rarely to 1.5 mm), the suture between the mericarps not sunken, the fruits thus appearing somewhat inflated; lower leaves tending to be ovate or palmately lobed .... 1. *A. acerifolia*

1. **Anoda acerifolia** Cav., Anales Ci. Nat. 6:336. 1803.

—Type: ex hort. Madrid, 1803 [seeds from hort. Florent.] (MA as photograph F—29756!).

Sida acerifolia Zuccagni in Roemer, Collectanea 148. 1809 (non (Cav.) Medikus, 1787). —*Anoda acerifolia* DC., Prodr. 1:459. 1824. ≡*Sida zuccagnii* Sprengel, Syst. 3:121. 1826. —*Anoda zuccagnii* (Sprengel) Fryx., Aliso 11:519. 1987. —Type: in cult. hort. Florent. from seeds from J. Bianchi, *Zuccagni s.n.* (FI—lost).

Illustrations: Wiggins, Fl. Baja Calif. *fig. 702*, p. 725. 1980; Fawcett and Rendle, Fl. Jamaica 5:107, *fig. 45*. 1926. Fryxell, Aliso 11:487, *fig. 1H*. 1987; Fl. Lesser Antilles 5:204. *fig. 84*. 1989.

Perennial (or annual) herb or subshrub, erect or decumbent to prostrate, the stems prominently to obscurely hispid (the hairs patent to retrorse) or subglabrous. Leaves petiolate, palmately lobed below to narrowly hastate above, subentire, acute, sparsely pubescent ot glabrate, sometimes with purple blotch along midvein and on margin. Flowers solitary in the axils, long-pedicellate; calyx 6–11 mm long in flower, 10–15 mm long in fruit, often more or less hispid; petals purplish or rose, 12–18 mm long; androecium included, the column apically hispid, basally glabrous. Fruits oblate, 8–11 mm diameter, lacking spines or with short spur, densely hispid, of 8–10 mericarps; mericarps indehiscent, gibbous, the lateral walls evanescent; seeds 2.5 mm long, without enclosing endocarp, solitary, glabrous.

Roadsides, cultivated fields, and disturbed ground; uncommon in Northern Highlands and Central Plateau; 0 to 1000 m. U.S., Mex. (Baja C.S., Son., Chih., Tam., Sin., Dgo., S.L.P., Nay., Jal., Cma., Mich., Mlos., Ver., Gro., Oax., Yuc., Chis.), Guat., Hond., S.A. (Ecu.). Chiapas Collections: *MC 2380* (F); *T&L 41044* (DS); *33488*.

Anoda acerifolia is very similar to *A. cristata*, and the two species are easily confused unless in fruit (see characters given in key). Even in fruit they are sometimes confused because of apparent overlap of characters. The two species are distinguished here on a tentative basis.

2. **Anoda albiflora** Fryx., Aliso 11:493. 1987.

—Type: Mexico, Jalisco, Jacotepec, Cultivated, Jan 1978, *Lape s.n.* (MICH; isotype: pf).

Illustrations: none known.

Erect herb or subshrub to 2 m tall, the stems more or less hirsute with simple hairs 1–2 mm long. Leaves petiolate, ovate or sometimes hastately lobed, narrower upward, crenate-serrate, acute, the upper surface with appressed simple hairs, the hairs on the lower surface principally on the veins. Flowers solitary in the axils, long-pedicellate; calyx 8–11 mm long in flower, to 15 mm long in fruit, prominently hirsute; petals lavender or white, 2–3 cm long; staminal column 4 mm long, hirsute. Fruits disciform, 8–10 mm diameter, hispid; mericarps ca. 15, with dorsal spine 1.5–2 mm long, the lateral walls evanescent; seeds solitary, ca. 3 mm long, not enclosed in endocarp, glabrous.

In cultivation, sometimes escaped (?); ca. 2000 m. Mex. (Chih., Jal., Chis.). CHIAPAS COLLECTION: *52647.*

Anoda albiflora is closely allied to *A. cristata.* In addition to having the distinguishing characters used in the key, the former species tends to have narrower petals and more nearly ovate leaves than the latter. On the basis of the lavender-flowered Chiapas specimen cited above, the species was misleadingly named.

3. **Anoda crenatiflora** Ortega, Nov. Pl. Descr. Dec. 8:96. 1798.

—*Sida crenatiflora* (Ortega) Persoon, Syn. Pl. 2:247. 1807. ≡*Anoda ortegae* Sprengel Nachtr. I., Bot. Gart. Halle 11. 1801. —TYPE: Peru (MA).

Anoda parviflora Cav., Icon. 5:19, *t.431.* 1799. —*Sida parviflora* (Cav.) Willd., Enum. Pl. 726. 1809 (non Sessé & Mociño, 1894). —TYPE: Mexico, *Pavón s.n.* (G as photograph F—23684!, P).

ILLUSTRATION: Reichenbach, Iconogr. Bot. Exot. 1:*pl. 44.* 1824.

Erect annual herb to 1 m tall with few ascending branches; stems with minute stellate puberulence. Leaves petiolate, ovate to hastate, narrowly so above, cordate, coarsely crenate-dentate to subentire, acute, minutely and obscurely pubescent. Flowers and fruits in terminal racemes or panicles; peduncles 2–7 cm long, articulated 0.5–1 cm below the flower; calyx 3–5 mm long, accrescent to 8 mm in fruit; petals pale yellow, 6–8 mm long. Fruits ca. 1 cm diameter, stellate-pubescent; mericarps 10–14, dorsally spurred (the spur 1–2 mm long), the lateral walls evanescent; seeds solitary, completely enclosed by reticulate endocarp; Aug–Nov.

Along streams, in forest margins, and in the understory of Tropical Deciduous Forest and Thorn Woodland; uncommon in the Central Depression and Sierra Madre; 800 to 1300 m. Mex. (Baja C.S., Son., Chih., Coah., N.L., Tam., Sin., Dgo., Zac., S.L.P., Jal., Gto., Hgo., Mlos., Pue., Gro., Oax., Chis.). CHIAPAS COLLECTIONS: *F 3323* (pf); *46137*; *52347*; *69991.*

4. **Anoda cristata** (L.) Schldl., Linnaea 11:210. 1837.

—*Sida cristata* L., Sp. Pl. 685. 1753. ≡*Anoda lavatera* Medikus, Malvenfam. 19. 1787. —TYPE: herb. Linnaeus (LINN—866.31, as microfiche!).

Anoda hastata Cav., Diss. 1:38. *t.11.f.2.* 1785. —LECTOTYPE (designated by Schlechtendal): Peru, Lima, *Dombey s.n.* (P—JU no. 12295A, as microfiche!).

ILLUSTRATIONS: Gray, Gen. Amer. Bor. *pl. 124.* 1849; Herter, Fl. Ilus. Uruguay, fasc. 13, *fig. 2149,* 1957; Krapovickas in Cabrera, Fl. Prov. Buenos Aires 4:199. *fig. 58.* 1965; New Britton and Brown, Illus. Fl. N. U.S. 2:531. 1968; Curt. Bot. Mag. *t.330*; O'Gorman, Mexican Flow. Plants & Trees, p. 125. 1961; Fryxell, Aliso 11:487, *fig. 1G.* 1987.

Erect or sprawling perennial herb, the stems usually hispid, the hairs patent or retrorse. Leaves variable, ovate, hastate, or palmately lobed, crenate to subentire, acute, sparsely pubescent above and beneath, the hairs mostly simple and appressed, often with purple blotch along midvein, sometimes also on margin; petioles hispid. Flowers solitary in the axils, long-pedunculate; calyx 5–10 mm long in flower, 12–20 mm long in fruit, hispid; petals purplish or violet (rarely white), 8–26 mm long; androecium included, pubescent. Fruit a flattened disk 8–11 mm diameter (excluding spines), densely hispid, of 14 or more mericarps; mericarps indehiscent, with spine 1.5–4 mm long on dorsal angle, the lateral walls evanescent; seeds 3 mm long, with or without an enclosing endocarp, solitary, glabrous; $2n = 30, 60, 90$.

Roadsides, cultivated fields, stream banks, urban habitats, and in disturbed ground; Evergreen Seasonal Forest, Pine–Oak Forest, Second–Growth and Successional Forest; common in Gulf Coastal Plain, Northern Highlands, Eastern Highlands, Central Plateau, and Central Depression; 600 to 2200 m. U.S., Mex. (Baja C., Baja C.S., Son., Chih., Coah., N.L., Tam., Sin., Dur., Zac., S.L.P., Nay., Jal., Gto., Qro., Hgo., Cma., Mich., Méx., D.F., Mlos., Tlax., Pue., Ver., Gro., Oax., Tab., Camp., Yuc., Chis.), Guat., Hond., Salv., Nic., C.R., Pan., Antill., S.A. (Col., Ven., Ecu., Peru, Bol., Chile, Braz., Arg., Urug.), Australia. CHIAPAS COLLECTIONS: *Cz 3375* (XAL, pf); *Cro 47697* (MO); *Cro 47829* (MO); *Cru 1198* (DS); *F 1176* (BH, CTES, pf); *F 2587* (BH, pf); *La 110* (DS); *La 735* (DS); *La 2113* (DS, LL); *La 2410* (DS); *R&R&M 1141* (LL); *Sa 21* (LL); *T 271* (DS); *T 851* (DS); *T 1237* (DS, LL); *T 1931* (DS); *T 4027* (DS); *T 4582* (MEXU, pf); *T 4933* (MEXU, pf); *We 12880* (MO); *Z 254* (RSA); *7437*; *7542*; *9453*; *10499*; *11899*; *12187*; *12853*; *13060*; *14467*; *14613*; *20214*; *21168*; *27806*; *33488*; *37487*; *52378*; *52647*; *53062.*

Anoda cristata is very similar to and sometimes confused with *A. acerifolia.* See comments under the latter species. Common names: Shunal zak (Tzeltal), shmal wash (Tzeltal), violeta.

5. **Anoda guatemalensis** Fryx., Aliso 11:498, *fig. 3.* 1987.

—TYPE: Guatemala, Los Robles bridge, border of Sololá and Chimaltenango Depts., alt. 1800 m, 21 Sep 1971, *Molina and Molina 26698* (ENCB!; isotypes: EAP, F! MICH!).

ILLUSTRATIONS: **Fig. 3**; Fryxell, Aliso 11:499, *fig. 3,* 1987; Fryxell, Syst. Bot. Monogr. 25:84, *fig. 15J.* 1988.

Erect herb 1 m tall, the stems, petioles, and peduncles minutely scabriculous. Leaves basally cordate, usually palmately 3-lobed, the central lobe lance-ovate to linear-lanceolate, serrate to obscurely crenate, acute, concolorous, evenly and minutely stellate-pubescent. Flowers axillary or somewhat aggregated apically; pedicels often equaling or exceeding the subtending leaf; calyx 7 mm long (in flower) to 10 mm long (in fruit), evenly stellate-pubescent; petals 11–14 mm long, lavender; staminal column 7 mm tall, pallid, densely hispid, the filaments 1.5 mm long, the anthers sometimes lavender; styles 10, glabrous, the stigmas abruptly capitate. Fruits oblate, stellate-pubescent; mericarps 10, dorsally spurred, the spur ca.

0.5 mm long, the lateral walls evanescent; seeds solitary, 3 mm long, not enclosed in a persistent reticulate endocarp.

Forest clearings and roadsides in Pine-Oak Forest; uncommon in Central Plateau; 1000 to 2400 m. Mex. (Oax., Chis.), Guat. CHIAPAS COLLECTIONS: *N 1466* (US); *N 3169* (US); *41257*.

6. **Anoda pristina** Fryx., Syst. Bot. 4:253. 1979.

—TYPE: Mexico, Chiapas, Mpio. Tenejapa, paraje of Kulak'tik, on slope with *Pinus* and *Quercus* in the barrio of Chana'; elevation 4800 ft; 24 Nov 1964, *Breedlove 7546* (DS!; isotypes: F! MICH!).

ILLUSTRATIONS: Syst. Bot. 4:254, *fig. 1.* 1979; Fryxell, Aliso 11:487, *fig. 1N.* 1987.

Perennial herb or subshrub, the stems short-hispid becoming glabrate. Leaves palmately lobed, the lobes ovate, subentire, acute, glabrate above and beneath, appressed-ciliate on the margin, discolorous; petioles antrorsely hispid. Flowers solitary in the axils, the peduncles accrescent to 10 cm in fruit; calyx 5–6 mm long in flower to 12–14 mm long in fruit, nearly glabrous; petals purplish, 7–9 mm long; androecium included, glabrous. Fruit a flattened disk 10–13 mm diameter, sparsely hispid to subglabrous, of 12–13 mericarps; mericarps spineless, with a basal nerve bifurcating above, the branches defining a small apical zone of dehiscence, with lateral walls disintegrating except for a coarse reticulum; seeds solitary, 3 mm long, minutely and evenly pubescent.

Forest understory in Pine-Oak-Liquidambar Forest; rare in Central Plateau; ca. 1500 m. Endemic. CHIAPAS COLLECTIONS: *7546*.

6. BAKERIDESIA

Bakeridesia Hochr., Annuaire Conserv. Jard. Bot. Genève 15/16:297. 1913. —TYPE: *Bakeridesia galeottii* (E. G. Baker) Hochr.

Shrubs or small trees 1–8 m tall, densely stellate-pubescent, often ferrugineous. Leaves petiolate, broadly ovate, cordate (or narrower and truncate in the inflorescence), entire, acute or acuminate, minutely stellate-pubescent above and beneath, more densely so beneath, sometimes discolorous. Flowers solitary in the axils or aggregated into axillary or terminal inflorescences; involucel absent; calyx pentamerous, gamosepalous, the lobes usually prominently ribbed, sometimes twisted in bud; petals yellow or yellow-orange, usually with a dark reddish spot at base, usually large (1.5–6 cm) and showy; staminal column included or exserted, usually pubescent. Fruits schizocarpic, of 7–27 mericarps, more or less blackish, stellate-pubescent; mericarps 2–7-seeded, often with a lacerate wing on dorsal margin; seeds reniform, pubescent; $x = 15$.

Thirteen Mexican and Central American species (subgenus *Bakeridesia*) are included in this genus, and seven or more South American species may or may not be congeneric with them.

REFERENCE: BATES, D. M. 1973. A revision of *Bakeridesia* Hochr. subg. *Bakeridesia* (Malvaceae). Gentes Herb. 10:425–484.

a. Pedicels 1–2 cm long; calyx 7–10 mm long; petals 15–35 mm long; carpels 11–12 .... 3. *B. pittieri*
aa. Pedicels 2–20 cm long; calyx 20–35 mm long; petals 35–60 mm long; carpels 16–27.
  b. Staminal column more or less included, 11–20 mm long; carpels 16–18; calyx minutely stellate-puberulent .... 1. *B. gloriosa*
  bb. Staminal column exserted, 30–35 mm long; carpels 20–27; calyx densely wooly with complex dendritic hairs .... 2. *B. nelsonii*

1. **Bakeridesia gloriosa** D. Bates, Gentes Herb. 10:452. 1873.

—TYPE: Mexico, Chiapas, 20 km N of Tuxtla Gutiérrez on road to El Sumidero, 16 Feb 1965, *Breedlove 9044* (F!; isotypes: BH, F! MICH!).

ILLUSTRATIONS: Gentes Herb. 10:453, *fig. 11.* 1973.

Shrubs to 5 m tall, densely stellate-pubescent, young growth more or less ferrugineous. Leaves ovate to broadly ovate, cordate to almost truncate, entire, acute to acuminate, minutely stellate-pubescent above and beneath, slightly discolorous. Peduncles solitary in the axils, up to 9 cm long, densely stellate-pubescent, articulated 6–10 mm below the flower; calyx ⅔ divided, 2–3 cm long, prominently nerved, densely stellate-puberulent; petals 3.5–6 cm long, yellow, sometimes with reddish or orange base; staminal column included, 11–20 mm long, pubescent; styles 16–18, pubescent. Fruits depressed-oblate, 16–28 mm diameter, stellate-pubescent, the hairs often dendritic; mericarps lacerate-winged on dorsum, 6-seeded; seeds ca. 3.5 mm long, with scattered hairs and irregular papillae; Dec–Apr.

Forests and roadsides in Tropical Deciduous Forest and Evergreen Seasonal Forest; common in Central Plateau and Central Depression; 900 to 1000 m. Mex. (Ver., Oax., Chis.). CHIAPAS COLLECTIONS: *Cro 64945* (CAS, MO, pf); *Mi 2642* (MEXU, US); *Mi 5827* (MEXU); *Mr 2520* (BH, US); *9044*; *20124*; *23580*; *30246*; *50148*.

2. **Bakeridesia nelsonii** (Rose) D. Bates, Gentes Herb. 10:455. 1973.

—*Abutilon nelsonii* Rose, Contr. U.S. Natl. Herb. 5:134. 1897. —TYPE: Guatemala, Huehuetenango, near Jacaltenango, 18 Dec 1895, *Nelson 3562* (US!; isotypes: BM! GH!).

ILLUSTRATIONS: **Fig. 4**; Rose, loc. cit., *pl. 12.* 1897; Bates, loc. cit. *fig. 6-I*, *fig. 12.* 1973.

Shrubs or small trees 2–6 m tall, densely stellate-pubescent, the young growth yellowish-brown. Leaves broadly ovate, cordate to almost truncate, entire, acuminate, densely and minutely stellate-pubescent above and beneath, discolorous. Peduncles solitary in the axils, 12–20 cm long, densely stellate-pubescent and with dendritic hairs distally; calyx ca. half-divided, 3–3.5 cm long, prominently wooly with brownish dendritic hairs; petals 4–5 cm long, yellow, more or less reflexed; staminal column seemingly exserted, ca. 3 cm long, stellate-pubescent; styles 22–27, pubescent. Fruits unknown; Dec–Jan.

Tropical Deciduous Forest; rare on the Pacific slope of the Sierra Madre; 1000 m. Chiapas Collections: *EM 2039* (A, DS, F, MEXU, MICH, NY, US).

3. **Bakeridesia pittieri** (J. D. Smith) D. Bates, Gentes Herb. 10:478. 1973.

—*Abutilon pittieri* J. D. Smith, Bot. Gaz. 56:51. 1913. —Type: Guatemala, El Puente near Las Canoas, 19 Apr 1905, *Pittier 138* (US!; isotype: US! as photograph F—46038!).

Illustrations: Bates, loc. cit., *fig. 6-B, fig. 8-C, fig. 19, fig. 20.* 1973.

Shrubs or small trees 2–3 m tall, densely stellate-pubescent, more or less ferrugineous. Leaves ovate, cordate or truncate, entire, acute or acuminate, minutely stellate-pubescent above and beneath, discolorous. Peduncles solitary in the axils or sometimes two or more per axil grouped at the ends of branches, 1–2 cm long, stellate-pubescent; calyx ca. half-divided, 0.7–1.4 cm long, stellate-pubescent, petals 2.6–3.5 cm long, yellow with red at base; staminal column ca. 1 cm long, pubescent; styles 11–12, glabrous. Fruits oblate, 11–13 mm diameter, stellate-pubescent. Mericarps apically acute, not winged. 3–4-seeded; seeds ca. 3 mm long, sparsely pubescent; Dec–Mar.

Forest, forest margins, along streams and roadsides in Tropical Deciduous Forest and Second-growth Forest; common in Central Depression; 600 to 1000 m. Mex. (Chis.), Guat. Chiapas Collections: *MC 1948* (F); *F 1167* (BH, DS, pf); *F 1172* (BH, pf); *F 1175* (BH, pf); *G 864* (GH); *Go 816* (US); *EM 5659* (F); *Ne 5522* (MO); *To 2308* (MEXU, pf); *9022*; *9631*; *24256*; *31560*; *39750*; *42216*; *42352*; *47585*; *50174*; *50312*.

7. BASTARDIA

Bastardia Kunth in H.B.K., Nov. Gen. Sp. 5:254 [folio ed. p. 197], *t. 472.* 1822. —Lectotype (Britton and Millspaugh, Bahama Flora, 1920, p. 270): *Bastardia parvifolia* Kunth.

Herbs or shrubs 0.5–3 m tall, pubescent with stellate, simple, and often glandular hairs. Leaves ovate, rarely lobulate, cordate, crenate or serrate, acute or acuminate. Flowers solitary or paired in the axils, often aggregated into terminal leafy panicles; involucel absent; calyx divided almost to the base, 5-parted; petals yellow, relatively small; androecium included, pallid; styles 5–8; stigmas capitate. Fruits schizocarpic but functionally capsular; mericarps 5–8, apically rounded or apiculate, 1-seeded; seeds minutely pubescent or glabrous; $x = 7$.

A neotropical genus of two species, both of which occur in Mexico; one of these has been reported from Chiapas.

Reference: Standley, P. C. 1923. Trees and shrubs of Mexico—*Bastardia.* Contr. U.S. Natl. Herb. 23:759.

1. **Bastardia viscosa** (L.) Kunth in H.B.K., Nov. Gen. Sp. 5:256 [folio ed. p. 199]. 1822.

—*Sida viscosa* L., Syst. Nat. ed. 10. 1145. 1759. —Type: Sloane, Voy. Jamaica *t.139.f.4.*

Sida foetida Cav., Diss. 6:349, *t.196.f.1.* 1788. —Type: Peru, Lima, ex Roy. Hort. Paris (MA as photograph BM! K!).

Bastardia parvifolia Kunth in H.B.K., Nov. Gen. Sp. 5:255 [folio ed. p. 198]. 1822. ≡*Sida bastardia* DC., Prodr. 1: 467. 1824. —*Bastardia viscosa* var. *parvifolia* (Kunth in H.B.K.) Griseb., Fl. Brit. W. I. 80. 1859. —Type: Peru, Cajamarca, prov. Jaén de Bracamoros, inter Pongo de Rentema et vicum Tomependae, *Humboldt and Bonpland s.n.* (P—HBK, as microfiche!).

Bastardia guayaquilensis Turcz., Bull. Soc. Naturalistes Moscou 31:201. 1858. —Type: Ecuador, Guayaquil, Apr 1846, *Jameson 588* (KW!; isotype: OXF!).

Illustrations: **Fig. 5**; H.B.K., Nov. Gen. Sp. 5:*pl. 472.* 1822; Fryxell, Syst. Bot. Monogr. 25:119.*fig. 24.* 1988; Fl. Lesser Antilles 5:212.*fig. 85.* 1989.

Subshrub or shrub 0.5–1.5 m tall, viscid (often malodorous), often also with long (2 mm) simple hairs on stems. Leaves ovate (rarely weakly lobulate), cordate, serrate to subentire, acute to acuminate, stellate-pubescent above and beneath, often viscid beneath, essentially concolorous. Flowers in the axils on slender pedicels, usually in terminal leafy panicles; calyx 4–5 mm long, divided nearly to the base, viscid; petals yellow, 5–7 mm long; staminal column included, pallid, glabrous. Fruits oblate, 6–8-celled, loculicidally dehiscent, stellate-pubescent, muticous; seeds solitary, 2 mm long, pubescent; $2n = 28$.

Roadsides and disturbed ground; Herbaceous Marsh; uncommon in Central Depression, probably also on Pacific Coastal Plain; 0 to 600 m. U.S., Mex. (N.L., Tam., S.L.P., Ver., Oax., Camp., Yuc., Q.Roo, Chis.), Hond., Nic., Pan., Antill., S.A. (Ven., Ecu., Peru). Chiapas Collections: *La 1103* (DS); *54377.*

8. BASTARDIASTRUM

Bastardiastrum (Rose) D. Bates, Gentes Herb. 11:318. 1978. —*Wissadula* sect. *Bastardiastrum* Rose, Contr. U.S. Natl. Herb. 5:178. 1899. —Lectotype (Bates, 1978:319): *Bastardiastrum hirsutiflorum* (K. Presl) D. Bates.

Shrubs or subshrubs 0.5–2 m tall, densely stellate-pubescent to glabrate, sometimes viscid, the stems often with purplish nodes. Leaves petiolate, ovate, usually cordate, serrate or dentate to subentire, acute or acuminate, usually soft-pubescent, often discolorous. Peduncles solitary (or clustered) in the axils, commonly aggregated into racemes or panicles; involucel absent; calyx usually ribbed, usually pubescent, clasping the fruit; petals white to pale lavender, 0.5–1.5 cm long; staminal column greatly shortened (nearly absent), the filaments slender, ca. 30, pallid, 3.5–9 mm long; styles 3–4, slender, pallid, the stigmas dark, capitate. Fruit schizocarpic, pubescent, obovoid; mericarps 3–4, more or less divided into an upper and lower cell, the upper 2-seeded, the lower 1-seeded, the upper cell dehiscent; seeds somewhat pubescent, the lower seed (when present) more prominently so; $x = 15$.

A wholly Mexican genus of six species, extending along the Pacific coast from Sonora to Chiapas, usually below 500 m elevation but reaching 1500 m in Guerrero and Jalisco.

Reference: Bates, D. M. 1978. *Bastardiastrum,* a segregate from *Wissadula.* Gentes Herb. 11:311–328.

1. **Bastardiastrum gracile** (Hochr.) D. Bates, Gentes Herb. 11:326. 1978.

– *Wissadula gracilis* Hochr., Annuaire Conserv. Jard. Bot. Genève 6:30. 1902. —Type: Mexico, Oaxaca, Tutotepec, southwest by south of Oaxaca, Mar 1845, *Jürgensen 48* (G as photograph F—23756!).

Illustrations: **Fig. 6**; Fryxell, Syst. Bot. Monogr. 25:125. *fig. 27.* 1988.

Subshrub 0.5–1.5 m tall, minutely stellate-pubescent. Leaves ovate (sometimes triangular), more or less cordate, obscurely crenate to subentire, acuminate, minutely soft-pubescent, somewhat discolorous. Peduncles axillary, usually shorter than the subtending petiole, the inflorescence usually racemose; calyx 6–8 mm long, ca. half-divided, densely pubescent, prominently ribbed; petals 7–10 mm long; filaments 3–6 mm long. Fruits 5–6 mm long, 3-carpelled, minutely stellate-pubescent; seeds minutely papillate, ca. 2.5 mm long; $2n = 30$; Sep–Jan.

Roadsides and open areas in Seasonal Evergreen Forest Tropical Deciduous Forest; uncommon in Central Depression, probably also in Pacific Coastal Plain; (200–)600–1000 m. Mex. (Oax., Chis.). Chiapas Collections: *F&L 3273* (BM, CHAPA, CTES, DS, ENCB, MO, MEXU, pf); *La 2809* (BH, DS, pf); *10009*; *28031*; *41546*; *47030*; *70842.*

9. BRIQUETIA

Briquetia Hochr., Annuaire Conserv. Jard. Bot. Genève 6:11. 1902. —Type: *Briquetia ancylocarpa* Hochr.

Herbs or subshrubs 0.5–1.5 m tall, usually with a single erect stem, branching only in inflorescence, more or less soft-pubescent with stellate and simple hairs. Leaves long-petiolate below to sessile immediately below the inflorescence, broadly ovate, sometimes somewhat lobulate, deeply cordate, serrate to undulate (or even subentire), acuminate. Inflorescence a leafless terminal spike or panicle; involucel absent; calyx gamosepalous, 5-lobed, small; petals yellow, less than 3 cm long; androecium included, pallid. Fruits schizocarpic, of 5–14 mericarps, strigose or glabrous; mericarps 2-celled (or upper cell vestigial in one species) the cells divided by a simple endoglossum, the lower cell 1-seeded, the upper cell 1–2-seeded; seeds more or less pubescent; $x = 7$.

A genus of four species, two from northern Mexico, one from Brazil and Paraguay, and one from Mexico and Cuba to Brazil and Bolivia.

Reference: Fryxell, P. A. 1976. New species and new combinations in *Briquetia* and *Hochreutinera,* and a discussion of the *Briquetia* generic alliance. Brittonia 28:318–325.

1. **Briquetia spicata** (Kunth) Fryx., Brittonia 28: 321. 1976.

—*Abutilon spicatum* Kunth in H.B.K., Nov. Gen. Sp. Pl. 5:271 [folio ed. p. 211]. 1822. ≡*Sida spiciflora* DC., Prodr. 1:468. 1824. – *Wissadula spicata* (Kunth) K. Presl, Reliq. Haenk. 2:117. 1835. —*Sida spicata* (Kunth) Salzm. ex Schumann, Martius Fl. Bras. 12(3):448. 1891. —*Pseudabutilon spicatum* (Kunth) R. E. Fries, Kongl. Svenska Vetenskapakad. Handl. 43:98. 1908. —Type: prope San Carlos del Rio Negro, *Humboldt and Bonpland s.n.* (P—HBK as microfiche!; isotype: B—herb. Willdenow 12712, as microfiche!).

Wissadula elongata Brandegee, Zoe 5:210. 1905. —Type: Mexico, Sinaloa, Cofradia, near Culiacán, 22 Oct 1904, *Brandegee s.n.* (UC!; isotype: US!).

Illustrations: **Fig. 7**; Fl. Bras. 12(3):*pl. 78.* 1891; Ann. Missouri Bot. Gard. 52:569. *fig. 10.* 1965; Brittonia 28:319, *fig. 1, E–F.* 1976; Syst. Bot. Monogr. 25:137. *fig. 32.* 1988.

Herbs or subshrubs 0.5–1.5 m tall, softly pubescent, with single erect stem and spreading lateral branches in inflorescence. Leaves long-petiolate below, abruptly sessile and amplexicaul immediately below the inflorescene, broadly ovate, sometimes weakly lobulate, deeply cordate, weakly serrate to subentire, acuminate, minutely stellate-pubescent above and beneath, more densely so beneath, usually somewhat discolorous. Inflorescence a leafless terminal (spiciform) raceme, simple or branched; pedicels 1–5 mm long; calyx 3–4 mm long; petals yellow, 4–5 mm long; androecium included, pallid. Fruits schizocarpic, strigose; mericarps 5–7, 2-celled, with endoglossum, the lower cell 1-seeded, the upper cell with 2 collateral seeds; seeds 2 mm long, short-pubescent; $2n = 14$; Oct–Dec.

Forest understory and roadsides in Evergreen Seasonal Forest, Tropical Deciduous Forest, and Pine-Oak Forest; uncommon in Central Depression, Sierra Madre, and Pacific Coastal Plain; 0 to 1100 m. Mex. (Sin., Mich., Gro., Oax., Chis.), Guat., Hond., Salv., Nic., Pan., Antill., S.A. (Col., Ven., Guy., Ecu., Peru, Bol., Braz.). Chiapas Collections: *Cz 3822* (XAL, pf); *EM 88* (US); *EM 17100* (DS); *39123*; *40666*; *46612*; *48576.*

10. DENDROSIDA

Dendrosida Fryx., Brittonia 23:231. 1971. —Type: *Dendrosida batesii* Fryx.

Shrubs or small trees 3–10 m tall, stellate-pubescent or -puberulent to glabrate. Leaves petiolate, ovate or trilobulate, cordate or truncate, serrate to subentire, acute, stellate-puberulent to glabrescent. Flowers solitary in the axils or in few-flowered axillary umbels, sometimes apically congested; involucel absent; calyx prominently 10-ribbed and -angled, ca. half-divided; petals yellow (in ours), 1.5–4 cm long; androecium included, pallid, pubescent; styles 8–11, slender, glabrous, the stigmas capitate. Fruits schizocarpic, nearly to quite glabrous; mericarps 8–11, indurate, apically dehiscent; seeds solitary, glabrous; $x = 21$.

Dendrosida includes four species from southern Mexico, principally in Chiapas but extending to Oaxaca and Guerrero, plus two additional species recently recognized from Venezuela.

References: Fryxell, P. A. 1971. A new genus from Mexico: *Dendrosida* (Malvaceae). Brittonia 23:231–237; Fryxell, P. A. 1988. Malvaceae of Mexico: *Dendrosida*. Syst. Bot. Monogr. 25:146–149.

a. Calyx 10–12 mm long; stipules 1–1.5 mm long; leaves minutely yellowish–puberulent, truncate, usually no more than 5 cm long; petioles < 1.5 cm long; peduncles 4–10 mm long .... 2. *D. breedlovei*
aa. Calyx 14–20 mm long; stipules > 2 mm long; leaves glabrescent, truncate or cordate, usually > 5 cm long; petioles > 2 cm long; peduncles 2–15 cm long.
  b. Leaves deeply cordate, about as broad as long; petioles almost equaling the blade; stipules ca. 4 mm long .... 1. *D. batesii*
  bb. Leaves cordate to truncate, longer than broad; petioles < half length of blade; stipules 6–13 mm long .... 3. *D. sharpiana*

1. Dendrosida batesii Fryx., Brittonia 23:231. 1971.

—Type: Mexico, Chiapas, NW of Tuxtla Gutiérrez on road to San Fernando, 23 Jan 1969, *Fryxell and Bates 896* (BH!; isotypes: DS! CTES! pf!).
Illustrations: Brittonia 23:232, *fig. 1, A–B, fig. 2.* 1971.

Shrub or small tree 3–5 m tall, glabrous. Leaves 3-angled or -lobed, about as broad as long, deeply cordate, coarsely crenate to subentire, acute or acuminate, glabrate above and beneath, concolorous. Peduncles 6–15 cm long, axillary, with 1–5 flowers subumbellately disposed; pedicels 2–4 mm long; calyx 14–16 mm long, ca. half-divided, glabrate; corolla and androecium unknown. Fruit a glabrous schizocarp 8 mm diameter; mericarps 10, 5–8 mm long, apically dehiscent, with unornamented lateral walls; seeds solitary, glabrous, 3.5 mm long; $2n = 42$.

In Tropical Deciduous Forest; rare in Central Depression; ca. 750 m. Endemic. Chiapas Collections: *F 1171* (BH, DS, pf); *F&B 896* (BH, CAS, CTES, pf).

2. Dendrosida breedlovei Fryx., Phytologia 37: 289. 1977.

—Type: Mexico, Chiapas, Mpio. de Cintalapa de Figueroa, 5 km W of Rizo de Oro, 18 Apr 1972, *Breedlove 24629* (DS!; isotypes: ENCB! F! MICH! RSA! pf!).
Illustrations: Phytologia 37:305, *fig. 2.* 1977.

Shrub or small tree to 7 m tall, yellowish stellate-puberulent to glabrate. Leaves short-petiolate, ovate, truncate, serrate or undulate-crenate, rounded-acute, stellate-puberulent especially below, somewhat discolorous. Flowers axillary, short-pedicellate; calyx 10–12 mm long, ca. half-divided, minutely yellowish-puberulent; petals yellow, 1.5 cm long; staminal column 4 mm long, pallid, pubescent; filaments 2–3 mm long; pollen yellow-orange; styles 8–9, pallid. Fruits schizocarpic, ca. 8 mm diameter; mericarps 8–9, sparsely pubescent at apex, otherwise glabrous, 5.5 mm long, apically dehiscent; Nov–Apr.

Usually on hillsides in Tropical Deciduous Forest; rare in Sierra Madre; 700 to 1000 m. Mex. (Oax., Chis.). Chiapas Collections: *Daniel 5865* (CAS); *24629*; *24644*.

3. Dendrosida sharpiana (Miranda) Fryx., Brittonia 23:233. 1971.

—*Sida sharpiana* Miranda, Anales Inst. Biol. Univ. Nac. México 24:85, *fig. 8.* 1953. —Type: Mexico, Chiapas, Grutas de Montecristo, 24 km al N de Tuxtla Gutiérrez, 18 Nov 1949, *Miranda 5714* (MEXU!; isotype: F!).
Illustrations: **Fig. 8**; Miranda, loc. cit., *fig. 8.* 1953; Fryxell, Brittonia 23:232. *fig. 1, C–E.* 1971; Fryxell, Syst. Bot. Monogr. 25:149. *fig. 36.* 1988.

Shrub or small tree to 10 m tall, sparsely puberulent to glabrate. Leaves ovate, 1.5–2 times as long as broad, cordate to truncate, crenate-serrate, acute or acuminate, glabrate, concolorous. Flowers solitary in the axils, the lower flowers on peduncles up to 8 cm long, the apical flowers subsessile and congested; calyx 15–20 mm long, ca. half-divided, minutely puberulent basally, otherwise glabrate; petals yellow, 2–4 cm long; staminal column ca. 6 mm long, pallid, sparsely hispid; filaments 4–7 mm long; pollen yellow-orange; styles ca. 10, pallid. Fruits schizocarpic; mericarps 8–11, subglabrous, 8–9 mm long, apically dehiscent; Sep–Dec.

Understory trees in Evergreen Seasonal Forest, Tropical Deciduous Forest, Pine-Oak Forest, and Second-Growth Forest; common in Northern Highlands, Central Plateau, Central Depression, and Sierra Madre; 800 to 1400 m. Mex. (Gro., Oax., Chis.). Chiapas Collections: *Cb 5960* (MEXU, pf); *F 2580* (CHAPA, CTES, DS, EAP, ENCB, NY, OS, SMU, pf); *F&L 3267* (CHAPA, DS, ENCB, GB, MEXU, MO, NY, WIS, pf); *F&L 3282* (BM, CHAPA, CTES, DS, ENCB, F, MEXU, MO, pf); *La 2137* (BH, DS, LL); *Mi 5714* (F, MEXU); *Mi 6811* (MEXU); *T 3085* (DS, F, LL); *13886*; *20423*; *37236*; *48466*; *71139*.

11. GAYA

Gaya Kunth in H.B.K., Nov. Gen. Sp. 5:266 [folio ed. p. 207]. 1822. —Lectotype (Hutchinson, Gen. Flow. Plants 2:562. 1967): *Gaya hermannioides* Kunth.

Herbs or subshrubs, minutely puberulent, sometimes also pilose. Leaves sometimes distichous, petiolate, ovate to oblong, cordate, crenate, serrulate, or subentire, acute, minutely puberulent. Peduncles solitary in the axils, the flowers sometimes nodding; involucel absent; calyx small, basally rounded, > half-divided, not prominently nerved; petals yellow (rarely lavender), 0.5–1.5 cm long; androecium included, the anthers yellow or orange; styles slender. Fruits sparsely pubescent to glabrate, subglobose to broadly subconical; mericarps 8–30, dehiscent, 1-seeded, usually with specialized pectinate endoglossum arising ventrally and enclosing seed; seeds more or less puberulent; $x = 6$.

Gaya is a genus of perhaps ten species, of which three occur in Mexico, two in Chiapas.

Reference: Standley, P. C. 1923. Trees and shrubs of Mexico—*Gaya*. Contr. U.S. Natl. Herb. 23:759–760.

a. Flowering pedicels 2–4 cm long, exceeding the leaves; calyx 5–7 mm long, the lobes apiculate; petals 8–12 mm long; mericarps 12–14 .... 1. *G. hermannioides*
aa. Flowering pedicels 1.5 cm long or less, not exceeding the leaves although elongating in fruit; calyx 3–4 mm long, the lobes acute; petals 5–8 mm long; mericarps ca. 10 .... 2. *G. minutiflora*

1. **Gaya hermannioides** Kunth in H.B.K., Nov. Gen. Sp. 5:268 [folio ed. p. 209], *t.475.* 1822.

≡*Sida gaya* DC., Prodr. 1:466. 1824. —Type: Mexico, [Guerrero,] in declivitate occidentali montium Mexicanorum, prope Sopilote [Quebrada de Sopilote], Apr 1803, *Humboldt and Bonpland s.n.* (P—HBK as microfiche! as photograph F—35492!).

Illustration: H.B.K., Nov. Gen. Sp. 5:*pl. 475.* 1822.

Subshrub ca. 1 m tall, sparingly branched, the stems sparsely stellate-puberulent. Leaves short-petiolate, oblong-ovate, cordate, serrate to subentire, acute, minutely stellate-puberulent above and beneath to glabrate above, slightly discolorous. Peduncles solitary in the axils, at anthesis > 2 cm long, slender; calyx 5–7 mm long, minutely stellate-puberulent; petals yellow, 8–12 mm long; staminal column glabrous, pallid, 4–5 mm long, the filaments 2–4 mm long; styles slender, pallid, glabrous, the stigmas capitate. Fruits ca. 1 cm diameter, sparsely puberulent, broadly subconical; mericarps 12–14, dehiscent, 1-seeded; seeds 2 mm long, sparsely pubescent; Jul–Jan.

Understory shrublet in Tropical Deciduous Forest and Pine-Oak Forest; uncommon in Central Plateau and Central Depression; 500 to 1500 m. Mex. (Pue., Ver., Gro., Oax., Yuc., Chis.), Hond., Sal., Nic., S.A. (Ecu., Peru, Bol.). Chiapas Collections: *Go 925* (US); *La 1139* (DS); *EM 5691* (F); *13227*; *42110*; *56262*; *69065*.

2. **Gaya minutiflora** Rose, Contr. U.S. Natl. Herb. 1:305. 1895.

—Type: Mexico, Colima, near Colima, 9 Jan–6 Feb 1891, *Palmer 1167* (US!; isotypes: BM! GH! MEXU! NY! US! pf!).

Gaya pringlei Hochr., Annuaire Conserv. Jard. Bot. Genève 20:140. 1917. —Type: Mexico, Oaxaca, hills near Oaxaca, Aug–Sep 1894, *Pringle 4858* (isotypes: CM! F! GH! K! MASS! MIN, US! VT!).

Illustrations: **Fig. 9**; Fryxell, Syst. Bot. Monogr. 25:158. *fig. 40.* 1988.

Subshrubs ca. 1 m tall, sparingly branched, the stems soft-puberulent. Leaves petiolate, ovate to oblong-ovate, cordate, crenate to subentire, acute, minutely stellate-pubescent above and beneath, with long simple hairs sometimes intermingled, slightly discolorous. Peduncles solitary in the axils, at anthesis < 1.5 cm long, elongating to 1.5–4.5 cm in fruit; calyx 3–4 mm long, minutely puberulent; petals yellowish, 5–8 mm long; staminal column pallid, 1–2 mm long, the filaments 1–2 mm long; styles slender, pallid, glabrous, the stigmas capitate. Fruits ca. 1 cm diameter, sparsely puberulent, broadly subconical; mericarps ca. 10, dehiscent, 1-seeded; seeds 2 mm long, densely short-pubescent; $2n = 12$; mostly Oct–Nov.

Roadsides, disturbed ground, and forest understory in Tropical Deciduous Forest and Shrub Associations; common in Central Plateau and Central Depression; 500 to 1500 m. Mex. (Sin., Jal., Aguasc., Cma., Mich., Mlos., Pue., Ver., Oax., Chis.), Guat., Hond., Nic. Chiapas Collections: *F 1166* (BH, pf); *2579* (CHAPA, EAP, pf); *3214* (CHAPA, DS, pf); *F&L 3305* (CHAPA, DS, ENCB, MEXU, pf); *T 3145* (DS, pf); *24613*; *42321*; *48980*; *52001*; *52182*; *52887*.

12. GOSSYPIUM

Gossypium L., Sp. Pl. 693. 1753; Gen. Pl. ed. 5. 309. 1754. —Lectotype (Britton and Millspaugh, 1920, Bahama Flora, 273): *Gossypium arboreum* L.

Xylon Miller, Gard. Dict. Abridg. ed. 4. 3. 1754.

Ingenhouzia DC., Prodr. 1:474. 1824 (non *Ingenhoussia* Dennst., 1818). —Type: *Ingenhouzia triloba* DC.

Thurberia A. Gray, Mem. Amer. Acad. Arts n.s. 5:308. 1854 (non Benth., 1881). —Type: *Thurberia thespesioides* A. Gray (≡*Gossypium thurberi* Tod.).

Erioxylum Rose & Standley, Contr. U.S. Natl. Herb. 13:307. 1911. —Type: *Erioxylum aridum* Rose & Standley.

Selera Ulbr., Verh. Bot. Vereins Prov. Brandenburg 55:50. 1913. —Type: *Selera gossypioides* Ulbr.

Shrubs or small trees, stellate-pubescent or glabrate, more or less gland-dotted throughout. Leaves ovate, weakly lobed, or deeply parted, entire, with one or more abaxial foliar nectaries (rarely absent); stipules subulate to falcate, more or less persistent, sometimes prominent. Flowers solitary (rarely several) in the axils of the leaves or in sympodial inflorescences; pedicels usually surmounted by trimerous involucellar nectaries; involucel of 3 bracts that are often cordate, foliaceous, laciniate or dentate (or sometimes entire), enclosing the bud, and persistent in fruit, the bracts sometimes reduced to linear straps or small scales or deciduous at anthesis; calyx gamosepalous, truncate or 5-dentate; petals cream, yellow, or rose, sometimes with dark spot at base, the corolla campanulate or funnelform, usually large and showy; androecium included, the anthers numerous; style single with decurrent stigmatic lobes, more or less exceeding the androecium. Capsule glabrous (rarely pubescent), often prominently gland-dotted, ovoid, dehiscent, 3–5-celled; seeds densely lanate (rarely subglabrous); $x = 13$.

A genus of ca. 40 species (Fryxell, 1979) of tropical and subtropical distribution, many of the species found in relatively arid areas in Africa and the Middle East, Australia, and North and South America. Several species have been grown for commercial cotton and have been distributed in cultivation far beyond their original homes. In Mexico three species are cultivated either commercially or in houseyard plantings, and ten other species occur wild as part of the indigenous flora; none of the latter group occurs in Chiapas, however.

REFERENCES: WATT, SIR GEORGE. 1907. The Wild and Cultivated Cotton Plants of the World. Longmans, Green & Co. x + 406 pages; HUTCHINSON, J. B. 1947. The classification of the genus *Gossypium. In:* The Evolution of *Gossypium.* Oxford University Press. xi + 160 pages; FRYXELL, P. A. 1969. A classification of the genus *Gossypium.* Taxon 18:585–591; FRYXELL, P. A. 1976. A nomenclator of *Gossypium*—the botanical names of cotton. Techn. Bull. U.S.D.A. 1491. pp. 1–114; FRYXELL, P. A. 1979. The Natural History of the Cotton Tribe. Texas A&M University Press. xviii + 245 pages.

a. Leaves deeply 5-lobed, the lobes narrowly lanceolate; capsules smooth, 3-celled, 1.5 cm long, round-apiculate; herbage glabrate; bracts of the involucel ca. 2 cm long; petals yellowish, 2–3 cm long .... 3. *G. lanceolatum*

aa. Leaves usually less than half-divided, the lobes broadly ovate; capsules smooth or pitted, 3–5-celled, more than 2 cm long, rotund to elongate; herbage pubescent to glabrate; bracts of the involucel mostly > 2 cm long; petals cream or yellow, 2–6 cm long.

  b. Leaves 3–7-lobed, the central lobe ovate to lanceolate, usually > 1.5 times as long as broad; stipules 1–5 cm long; bracts of the involucel 5–17-laciniate, the teeth acuminate from the base with rounded sinuses; calyx usually truncate, to 10 cm long; fringe hairs on floral nectary present; capsules pitted, narrowly ovoid to elongate, 3-celled .... 1. *G. barbadense*

  bb. Leaves 3–5-lobed, the central lobe triangular to ovate, usually 1–1.5 times as long as broad; stipules 0.5–1.5(–2) cm long; bracts of the involucel 3–19-laciniate, the teeth triangular and acute or lanceolate and acuminate in distal portion, with more or less acute sinuses; calyx truncate or with acute lobes or long-acuminate teeth usually < 6 mm long (excluding teeth); fringe hairs on floral nectary absent; capsule smooth, ovoid, or subglobose, 3–5-celled .... 2. *G. hirsutum*

1. Gossypium barbadense L., Sp. Pl. 693. 1753.

—*Hibiscus barbadensis* (L.) Kuntze, Revis. Gen. Pl. 1:67. 1891. —LECTOTYPE (cf. Fryxell, 1968, Brittonia 20: 378–386): Plukenet's plate, *t.188.f.1* (Phytographia 1692), reprinted by Watt (1907, *plate 46*).

Gossypium vitifolium Lam., Encycl. 2:135. 1786. —TYPE: *Sonnerat s.n.* (P—LA, as microfiche!).

Gossypium peruvianum Cav., Diss. 6:313. 1788. —TYPE: from Peru (MA as photograph US!).

Gossypium brasiliense Macfad., Fl. Jamaica 1:72. 1837. —TYPE: specimen unknown.

See: Fryxell (1979) for fuller synonymy.

ILLUSTRATIONS: Martius, Fl. Bras. 12(3):*pl. 114.* 1892; Herter, Fl. Ilus. Uruguay, fasc. 13. *figs. 2174, 2175, 2176.* 1957; Fawcett and Rendle, Fl. Jamaica 5:146, *fig. 55.* 1926; Fl. Lesser Antilles 5:212. *fig. 88.* 1989.

Shrubs 1–3 m tall, sometimes arborescent, sparsely stellate-pubescent to glabrate, erect and sparingly branched, gland-dotted throughout, the glands often dark-pigmented. Leaves cordate, 3–7-lobed, aceriform, long-petiolate; stipules subulate to falcate, 1–5 cm long, often prominent. Flowers solitary or in sympodial inflorescences; pedicels surmounted by 3 nectaries and by trimerous involucel; bracts of the involucel ovate, large and foliaceous, laciniate; calyx truncate; petals usually bright yellow with dark red spot at base, up to 8 cm long. Capsule 3-celled, glabrous, prominently pitted, usually narrowly elongate; seeds several per locule, free or fused together, lanate, the seed hairs (cotton) usually white; $2n = 52$.

Generally in small-scale cultivation, either in houseyards or in small gardens; rare in Eastern Highlands; 400 to 900 m. A South American plant introduced in cultivation, both in the New World and in the Old World. Mex. (Méx., Ver., Gro., Oax., Chis.). CHIAPAS COLLECTIONS: *Mi 7169* (MEXU); *T 4645* (MEXU, pf); *33982.*

Modern cultivars of this species provide the principal commercial cotton crop of Egypt and Peru, as well as significant commercial crops in other countries including the United States, the USSR, and Pakistan.

2. Gossypium hirsutum L., Sp. Pl. 975. 1763.

—*Gossypium barbadense* L. var. *hirsutum* (L.) Triana & Planchon, Ann. Sci. Nat. Bot. ser. 4. 17:171. 1862 (non J. D. Hooker & Benth. in Vogel, 1849). —*Gossypium herbaceum* L. var. *hirsutum* (L.) Masters in J. D. Hooker, Fl. Brit. India 1:347. 1874. —TYPE (cf. Fryxell, 1968, Brittonia 20:378–386): Miller's description of *Gossypium* no. 4, Gard. Dict. ed. 6. 1752.

Gossypium religiosum L., Syst. Nat. ed. 12. 462. 1767. —Type (cf. Fryxell, 1968, Brittonia 20:378–386): "religiosum" (LINN—874.6, as microfiche!).

Gossypium latifolium Murr., Novi Comment. Soc. Regiae Sci. Gött. 7:22. 1776. —Type: Murray's plate no. 1.

Gossypium punctatum Schum., Beskr. Guin. Pl. 309. 1827. —Type: not extant.

Gossypium taitense Parl., Sp. Cotoni 39. 1866. —Type: Tahiti, *Moerenhout s.n.* (FI; isotype: G—DC, as microfiche!).

Gossypium mexicanum Tod., Index Sem. Hort. Reg. Bot. Panorm. 1867:20, 31. 1868. —Type: "cult. in H. B. Pan. ann. 1868 e seminibus e Mexico acceptis," *Todaro s.n.* (PAL).

See: Fryxell (1979) for fuller synonymy.

Illustrations: Murray, loc. cit.; Herter, Fl. Ilus. Uruguay, fasc. 13, *figs. 2172, 2173.* 1957; New Britton and Brown, Illus. Fl. N. U.S. 2:535. 1968.

Shrubs 1–2 m (or more) tall, usually widely branching, more or less stellate-pubescent, gland-dotted throughout. Leaves cordate, weakly 3–5-lobed, long-petiolate; stipules subulate, 0.5–1.5(–2) cm long; flowers usually in sympodial inflorescences; pedicels surmounted by 3 nectaries and by trimerous involucel; bracts of the involucel ovate, foliaceous, laciniate; calyx truncate or 5-toothed; petals cream or pale yellow with or without dark spot at base, up to 5 cm long. Capsules 3–5-celled, glabrous, smooth, broadly ovoid or subglobose; seeds several per locule, free, lanate, the seed hairs (cotton) white, tan, or red-brown; $2n = 52$.

Generally cultivated either as houseyard plantings or in large-scale field cultivation, also feral in waste ground or on roadsides; 400 to 1000 m. A world-wide agricultural crop, in Mex. (Baja C., Baja C.S., Son., Chih., Coah., N.L., Tam., Sin., Dgo., Zac., Nay., Jal., Qro., Cma., Mich., Méx., Mlos., Pue., Ver., Gro., Oax., Tab., Camp., Yuc., Q.Roo, Chis.). Chiapas Collections: *C&D 104* (US); *C&D 151* (US); *C&D 152* (US); *La 1108* (DS); *EM 17224* (F); *Mi 6055* (DS); *T 406* (DS); *7251*; *11748*; *36885*; *39643*.

Gossypium hirsutum originated in Meso-America and still occurs in a wild state in widely separated littoral situations, especially in Yucatán. More commonly it is found as a houseyard or feral plant (as in Chiapas) or as a major agricultural crop (as, for example, in the vicinity of Torreón). In historical times it has become the dominant cotton crop of the world.

3. **Gossypium lanceolatum** Tod., Relaz. Cult. Coton. 185. 1877.

—*Gossypium hirsutum* L. var. *lanceolatum* (Tod.) Aliotta, Rev. Crit. Gen. Gossypium 80. 1903. —*Gossypium jamaicense* Macfad. forma *lanceolatum* (Tod.) Roberty, Candollea 13:101. 1950. —Type: Mexico, "Tepic et sur la route de Jalisco, ex herb. Webb" (FI).

Gossypium palmeri G. Watt, Wild Cult. Cotton Plants World 204, *pl. 34.* 1907. *Gossypium hirsutum* L. forma *palmeri* (Watt) Wouters, Publ. Inst. Natl. Étude Agron. Congo Belge, ser. sci. no. 34:103. 1948. —Type: Mexico, Guerrero, vicinity of Acapulco, 1894–1895, *Palmer 384* (K!; isotypes: GH! MICH! MO! NY! US!).

See: Fryxell (1979) for fuller synonymy.

Illustrations: Watt (1907), *pl. 34.*

Shrubs 1–2 m tall, the stems glabrate, black-gland-dotted. Leaves petiolate, deeply digitately 5-parted (or reduced above to 3-parted or even a lanceolate simple leaf), the lobes narrowly lanceolate, entire, acuminate, the margins ciliate, otherwise sparsely pubescent (especially on nerves), gland-dotted, with a nectary on the midrib basally; stipules falcate, 8–10 mm long, acuminate, caducous. Flowers borne on sympodia, the pedicels 0.5–1 cm long, surmounted by 3 nectaries; bracts of the involucel 3, foliaceous (enclosing bud), ovate, 3–7-laciniate, 1.5–2 cm long, glabrate, sparsely gland-dotted; calyx 5–6 mm long, undulately 5-toothed (subtruncate), prominently gland-dotted, glabrous; corolla 2.5–3 cm long, yellowish with indistinct reddish throat, with minute black glands scattered evenly; staminal column ca. 6 mm long, glabrous, pallid, gland-dotted; anthers and pollen yellow-orange; style slender, exceeding androecium by 1 cm, the stigmatic lobes decurrent. Capsule 3-celled, subglobose, apiculate, glabrous, pitted; seeds several, lanate, the cotton white; $2n = 52$.

Cultivated in houseyard plantings; rare in the Central Depression; ca. 500 m. Chiapas Collections: *C&D 101* (US, pf).

This species has commonly been included within *G. hirsutum* as a variant with digitately divided leaves, but recent evidence suggests it merits being distinguished in specific rank. It is known only in cultivation.

13. HAMPEA

Hampea Schldl., Linnaea 11:371. 1837. —Type: *Hampea integerrima* Schldl.

Trees or shrubs, mostly dioecious, glabrate or stellate-pubescent. Leaves elliptic, ovate, or weakly lobed, entire, minutely gland-dotted, with one or more abaxial foliar nectaries; stipules not prominent, caducous. Flowers solitary or in axillary fascicles, each flower subtended by an involucel of 3 inconspicuous bractlets, sometimes also by 3 involucellar nectaries; calyx gamosepalous, more or less truncate; petals white, gland-dotted, reflexed; staminate flowers with reduced staminal column and numerous exserted stamens, no gynoecium; pistillate flowers with rudimentary androecium, recurved style, decurrent stigmatic lobes. Capsules densely puberulent, globose to elongate, dehiscent, 3–4-celled; seeds glabrous, arillate; $x = 13$.

A neotropical genus, from central Mexico (Colima, Veracruz, Yucatán) to Colombia. Fryxell (1969) recognized 16 species (and one variety), and five additional species have more recently been described. Nine species occur in Chiapas; the Chiapas–Guatemala region is a major center of diversity for the genus.

References: Fryxell, P. A. 1969. The genus *Hampea* (Malvaceae). Brittonia 21:359–396; Fryxell, P. A. 1974. Further observations on the genus *Hampea*. Southw. Naturalist 18:481–483; Fryxell, P. A. 1979. The Natural History of the Cotton Tribe. Texas A&M University Press. xviii + 245 pages.

a. Fruits about twice as long as broad, with 6–12 seeds per locule.
  b. Leaf margin ciliate; calyx puberulent; flowers 5 cm diameter; domatia present; species dioecious (flowers unisexual) .... 2. *H. latifolia*
  bb. Leaf margin eciliate; calyx glabrate; flowers 2.5 cm diameter; domatia absent; flowers perfect ..... 7. *H. rovirosae*
aa. Fruits globose or ovoid (nearly as broad as long) with 1–4 seeds per locule (except 5–8 in *H. mexicana*); flowers unisexual (species dioecious).
  c. Leaves puberulent or pubescent, at least on lower surface; capsules green- or yellow-puberulent.
    d. Foliar nectaries single, basal; capsules woody, green-puberulent; leaves usually trilobulate ...... 9. *H. trilobata*
    dd. Foliar nectaries usually 3 or more; capsules coriaceous, green- or yellow-puberulent; leaves usually unlobed (or somewhat lobed in *H. mexicana*).
      e. Leaves 1–1.5 times as long as broad; seeds 5–8 per locule; capsules yellow-puberulent externally, glabrous internally .... 4. *H. mexicana*
      ee. Leaves 2 or more times as long as broad; seeds 1–4 per locule.
        f. Stipules 2–5 mm long; pedicels 1–3 cm long; capsules yellow-puberulent externally, glabrous internally .... 8. *H. stipitata*
        ff. Stipules 6–10 mm long; pedicels 3–5 cm long; capsules green-puberulent externally, white-pubescent internally .... 5. *H. montebellensis*
  cc. Leaves glabrate; capsules green-puberulent externally.
    g. Leaves cordate, almost as broad as long, without domatia; capsules glabrous internally .... 6. *H. nutricia*
    gg. Leaves elliptic, basally cuneate, 2 or more times as long as broad, with or without domatia; capsules glabrous or pubescent internally.
      h. Leaves with domatia and 3 foliar nectaries; pedicels 3–6 cm long; capsules 1–2 cm diameter, glabrous internally except white-pubescent along suture margin; seeds solitary; corolla 2–2.5 cm diameter .... 3. *H. longipes*
      hh. Leaves without domatia; foliar nectary single; pedicels up to 16 cm long; capsules 3 cm diameter, glabrous within; seeds 2–3 per locule; corolla ca. 5 cm diameter .... 1. *H. breedlovei*

1. **Hampea breedlovei** Fryx., Phytologia 37:291. 1977.

—Type: Mexico, Chiapas, Municipio de Rayón, in the selva negra 10 km above Rayón Mezcalapa along road to Jitotol, elev. 1700 m, 27 Jan 1973, *Breedlove and Smith 32601* (DS!; isotypes: DS! MEXU! MICH! RSA! pf!).
Illustration: Fryxell, loc. cit.:306, *fig. 3.* 1977.

Dioecious trees to 7 m tall; foliage glabrate. Leaves broadly elliptic, acute or acuminate, 2–3 times as long as broad, with single small foliar nectary; petioles ¼–½ length of blade. Pedicels 3 cm long (in flower) to 16 cm long (in fruit), slender; involucellar nectaries lacking; bractlets of involucel 1.5–2 cm long, inconspicuous, persistent; calyx 6–8 mm long, puberulent proximally, glabrate distally; flowers unisexual; petals 20–22 mm long, asymmetrically contorted and fringed distally; filaments (of staminate flowers) 4–7 mm long. Capsule 3-loculed, globose, 3 cm long, externally greenish-puberulent, internally glabrous; seeds 2 or 3 per locule; Sep–Oct (?).

In Montane Rain Forest; rare in Northern Highlands and Central Plateau; 1700 m. Endemic. Chiapas Collections: *C700624-106* (CAS); *T&L 40375* (DS, LL); *32601*; *49331*; *50447*.

Hampea breedlovei is notable for its pendulous fruits and very long slender pedicels and for its relatively large, contorted, and fringed petals.

2. **Hampea latifolia** Standley, Publ. Field Mus. Nat. Hist., Bot. Ser. 22:90. 1940.

—Type: Guatemala, Dept. Retalhuleu, Finca San José Nil, 23 Aug 1936, *Hatch and Wilson 383* (F!).
Illustrations: Fryxell, 1969:377, *fig. 5, E–H*; 384, *fig. 7, C–D.* Centro Inv. Ecol. Sureste (Tapachula), Bol. Inf. 3:10. 1977.

Dioecious shrubs or small trees 1–6 m tall; foliage glabrate. Leaves cordate, broadly ovate, sometimes weakly 3-lobed, acute to abruptly acuminate, minutely ciliate-margined, with domatia and 3–5 small foliar nectaries; petioles approximately equaling blades. Pedicels 1–2 cm long (in flower) to 3 cm (in fruit), stout and woody, surmounted by 3 bordered involucellar nectaries that are somewhat irregularly inserted; bractlets of involucel 5–7 mm long, puberulent, caducous in fruit; calyx 7–12 mm long, yellowish-puberulent; flowers unisexual; petals 3 cm long; staminal column (of staminate flowers) 4–5 mm long, the filaments 4–10 mm long. Capsules 3(–4)-loculed, 3.5–4.5 cm long, 1.5–2 cm diameter, externally yellow-green puberulent, internally glabrous with sparse hairs along suture; seeds 8–12 per locule; Jun–Oct.

In thickets, along streams, and on plains in lowland remnants of Evergreen Seasonal Forest; uncommon at the southern end of the Pacific Coastal Plain; 100 to 300 m. Mex. (Chis.), Guat. Endemic to the Soconusco Region of Chiapas and adjacent Guatemala. Chiapas Collections: *Bod s.n.* (DS); *F 3218* (CHAPA, DS, ENCB, MEXU, pf); *X&S 498* (DS); *EM 18502* (CAS, DS, F).

3. **Hampea longipes** Miranda, Ceiba 4:133. 1954.

—Type: Mexico, Chiapas, en el camino de Pueblo Nuevo Solistahuacán a Rayón, 3 May 1953, *Miranda 7769* (MEXU!; isotype: F!).
Illustrations: Miranda, Ceiba 4:134. 1954; Fryxell, 1969: 369, *fig. 3, J–L*; 371, *fig. 4, C–D.*

Dioecious trees 7–15 m tall; stems brown-puberulent becoming glabrate. Leaves narrowly elliptic, acute or acuminate, 2.5–4 times as long as broad, glabrate, with domatia and 3 inconspicuous foliar nectaries; petioles usually < ¼ length of blade. Pedicels 3–6 cm long, slender, somewhat puberulent to glabrate; involucellar nectaries absent; bractlets of involucel 2–10 mm long, persistent; calyx 4–8 mm long, yellowish puberulent basally, glabrate distally on margin; flowers unisexual; petals 1–1.5 cm long; filaments (of staminate flowers) 5–8 mm long; (pistillate flowers not seen). Capsules 3-celled, globose, 1–2 cm long, externally green-puberulent, internally glabrous except white-pubescent on suture; seeds solitary; Aug–Nov.

In understory of Montane Rain Forest and Pine-Oak-Liquidambar Forest; common in Northern Highlands, Central Plateau, and Sierra Madre; 900 to 1900 m. Mex. (Chis.), Guat., Hond. Chiapas Collections: *F 2595* (CHAPA, CTES, DS, ENCB, SMU, pf); *Mi 7769* (F, MEXU); *T 4491* (MEXU, pf); *T&L 41086* (DS); *T&L 41298* (DS); *Z 760* (DS); *8972*; *10142*; *12044*; *19973*; *21378*; *27604*; *30758*; *31359*; *31406*; *44406*; *49642*; *51082*.

4. **Hampea mexicana** Fryx., Brittonia 21:380. 1969.

—Type: Mexico, Oaxaca, Dept. Pochutla, Cafetal San Rafael, 14 May 1917, *Conzatti, Reko and Makrinius 3292* (US!; isotype: MICH!).

Illustrations: Fryxell, 1969:369, *fig. 3, A–D*; 379, *fig. 6, E–G.*

Dioecious trees 7–10 m tall; foliage pubescent. Leaves truncate to cordate, ovate or somewhat 3-lobed, acute or acuminate, about as broad as long; foliar nectaries 1–5, small; petioles ⅓–⅔ as long as blade. Pedicels ca. 1 cm long (in flower) to 4 cm long (in fruit), tomentose, becoming stout in fruit, surmounted by prominent involucellar nectaries; bractlets of involucel 4–8 mm long; calyx 5–12 mm long, densely puberulent; flowers unisexual; petals 1.5 cm long; style recurved with decurrent stigmatic lobes, exceeding rudimentary androecium by 2–3 mm; (staminate flowers unknown). Capsules 3-loculed, ovoid or globose, 2.5–3.5 cm long, externally yellowish puberulent, internally glabrous; seeds 5–8 per locule.

On hillsides in Lower Montane Rain Forest, Seasonal Evergreen Forest, and Tropical Deciduous Forest; common in the Northern Highlands, Eastern Highlands, Central Plateau, Central Depression, and Sierra Madre; 350 to 1500 m. Mex. (Oax., Chis.), Guat. Chiapas Collections: *Cb 6215* (MEXU, pf); *Cv 125* (pf); *Cz 2887* (XAL, pf); *Cz 3948* (XAL, pf); *F 1170* (ARIZ, DS, F, MEXU, MICH, NY, pf); *F 900* (BH, DS); *Mi 5431* (MEXU, US); *Mi 7580/6* (MEXU, US); *23346*; *23393*; *28248*; *28829*; *29009*; *30380*; *32787*; *44364*.

5. **Hampea montebellensis** Fryx., Phytologia 37: 291. 1977.

—Type: Mexico, Chiapas, Municipio de La Trinitaria, east of Laguna Tzikaw, Monte Bello National Park, elev. 1300 m, 23 Jan 1973, *Breedlove and Smith 32191* (DS!; isotypes: MEXU! MICH! pf!).

Illustration: Fryxell, loc. cit.:307, *fig. 4.*

Presumably dioecious trees to 20 m tall, the stems persistently brown-puberulent. Leaves truncate, ovate-elliptic, acute to acuminate, 2–3 times as long as broad, glabrate above, puberulent beneath, with 3 inconspicuous foliar nectaries; petioles ¼ length of blade or less, densely puberulent. Pedicels 3–5 cm long (in fruit), densely puberulent; involucellar nectaries absent (?); bractlets of the involucel deciduous; calyx 5–8 mm long, minutely puberulent. Capsules 3-celled, globose, 1.5–2 cm long, externally green-puberulent, internally white-pubescent; seeds 1–2 per locule; Sep–Oct.

In Montane Rain Forest and Pine-Oak-Liquidambar Forest; common in Central Plateau; 1100 to 1500 m. Endemic. Chiapas Collections: *Cb 6105* (MEXU, pf); *26473*; *30824*; *32191*; *41920*; *48795*; *52261*; *53423*; *53474*; *58396*.

6. **Hampea nutricia** Fryx., Brittonia 21:372. 1969.

—Type: Mexico, Veracruz, near Catemaco, hillside forest on grounds of Catemaco Mineral Water Company, 28 Sep 1966, *Fryxell 526* (US!; isotypes: BH! BM! CTES! F! LE! TAES! pf!).

Illustrations: Pennington and Sarukhán, Arboles Tropicales de México, p. 285. 1968; Fryxell, 1969:361, *fig. 2, A–B*; 369, *fig. 4, E–F.*

Large shrub or small tree to 10 m tall, dioecious, the foliage glabrate. Leaves cordate, broadly ovate or moderately 3-lobed, acute or acuminate, about as broad as long, with 5–7 foliar nectaries; petioles half length of blade to equaling blade. Pedicels 1–2.5 cm long (in flower) to 4 cm long (in fruit), slender; involucellar nectaries lacking; bractlets of involucel 1–3(–8) mm long, inconspicuous, caducous; calyx 4–8 mm long, yellowish puberulent; flowers unisexual; petals 1–1.5 cm long; filaments (of staminate flowers) 5–9 mm long; style and stigma (of pistillate flowers) recurved, exceeding rudimentary androecium. Capsule 3-loculed, 1.5–2 cm long, externally greenish-puberulent, internally glabrous except for fringe of hairs along suture; seeds ca. 8 mm long, blackish, glabrous, arillate; $2n = 26$; Sep–Nov.

In forest understory and forest margins, persisting in fence rows and disturbed areas near Lower Montane Rain Forest; uncommon in the Gulf Coastal Plain and Northern Highlands; 0 to 1000 m. Mex. (Pue., Ver., Tab., Chis.). Chiapas Collections: *Ch 3421* (MEXU); *F 683* (MEXU, NY, pf); *F 684* (CAS, NY, TAES); *F 883* (BH, pf); *45912*.

Hampea nutricia (vernacular name: "majagua") serves as an alternate host of the boll weevil (*Anthonomus grandis* Boheman), a major agricultural pest of cultivated cotton. It is also used as a source of crude cordage in the form of strips of bark torn from the branches for their strong bast fibers. Other species of *Hampea* are used similarly.

7. **Hampea rovirosae** Standley, J. Wash. Acad. Sci. 17:397. 1927.

—Type: Mexico, Tabasco, Río Grijalva, 19 Aug 1889, *Rovirosa 586* (US!; isotypes: K! NY! PH!).

Hampea macrocarpa Lundell, Lloydia 2:102. 1939. —Type: Mexico, Chiapas, Las Garzas, Acapetagua, Jan 1939, *Matuda 2676* (MICH!; isotypes: K! MEXU! MICH! NY! US!).

Illustrations: Fryxell, 1969:377, *fig. 5, I–K*; 384, *fig. 7, E–G*; Centro Inv. Ecol. Sureste (Tapachula) Bol. Inf. 3:12. 1977.

Shrub or small tree 2–7 m tall; foliage essentially glabrous. Leaves cordate, ovate (or sometimes weakly lobulate), acuminate, with 3–5 inconspicuous foliar nectaries, lacking domatia; petioles from half length of blade to slightly exceeding blade. Pedicels 1–1.5 cm long (in flower) to 3 cm long (in fruit), with 3 prominent raised involucellar nectaries irregularly inserted (often well below calyx on pedicel); bractlets of involucel inserted immediately above nectaries, minute, sometimes paired, early caducous; calyx 6–9 mm long, often 5-toothed, glabrate; flowers perfect; petals 1.5–2 cm long; filaments 3–6 mm long. Capsules 3(–4)-loculed, 3–3.5 cm long (1.5–2 cm diameter), externally yellow-puberulent, internally glabrous; seeds 6–8 per locule; $2n = 26$; May–Nov.

Along streams, along roadsides, in Lowland Riparian Forest; locally common in Gulf Coastal Plain and uncommon (disjunct) in the Soconusco Region of the Pacific Coastal Plain; 0–100 m. Mex. (Tab., Chis.), Guat. Chiapas Collections: *Bod s.n.* (CAS, pf); *Cv 118* (CAS, pf); *F 3206* (CHAPA, DS, ENCB, MEXU, pf); *EM 2676* (MEXU, MICH, NY, US); *EM 2726* (MEXU, MICH); *Mi 6612* (MEXU); *47259.*

Common name: "majagua de playa."

8. **Hampea stipitata** S. Watson, Proc. Amer. Acad. Arts 21:460. 1886.

—Type: Guatemala, Izabal, Chocón Plantation, 20 Mar 1885, *Watson 31* (GH!; isotype: K!).

Hampea euryphylla Standley, Publ. Field Mus. Nat. Hist., Bot. Ser. 11:135. 1932. —Type: British Honduras, Temash River, 9 Dec 1930, *Smart and Stevenson 142* (F!; isotype F!).

Illustrations: **Fig. 10**; Fryxell, Brittonia 21:369, *fig. 3, E–F;* 379, *fig. 6, A–B.* 1969; Fryxell, Syst. Bot. Monogr. 25:186. *fig. 46.* 1988.

Dioecious trees 5–20 m tall; foliage brownish-tomentose. Leaves truncate, ovate (sometimes elliptic), acute or acuminate, about twice as long as broad, with 3–5(–7) inconspicuous foliar nectaries; petioles hoary, up to half length of blade. Pedicels ca. 1 cm long (in flower) to 3 cm long (in fruit), densely yellowish-brown-puberulent; involucellar nectaries absent; bractlets of involucel 1–3 mm long, often persistent in fruit; calyx 4–7 mm long, yellow-puberulent except glabrate on margin; flowers unisexual; petals ca. 1 cm long; filaments (of staminate flowers) 3–7 mm long; style and stigma (of pistillate flowers) contorted, about equaling petals. Capsules 3-celled, globose, 2–3.5 cm long, externally yellow-puberulent, internally glabrous except simple hairs 1 mm long on suture; seeds 2–4 per locule; $2n = 26$; Sep–Dec.

In Tropical Rain Forest and Lower Montane Rain Forest; common in Gulf Coastal Plain, Northern Highlands, and especially in Eastern Highlands; 80 to 800 m. Mex. (Ver., Oax., Chis.), Guat., Bel., Salv. Chiapas Collections: *Hoov 165* (MO, pf); *Lu 17796* (LL); *Mz 7859* (MEXU, pf); *Mz 7952* (MEXU, pf); *Mi 6315* (MEXU); *Mi 7646* (MEXU, US); *Mi 7860* (DS, MEXU, US); *P&P 3064* (CHAPA, pf); *R&R&M 902* (DS, F); *T 3807* (DS-2); *V 2287* (XAL, pf); *26328*; *28829*; *30766*; *34508*; *38208*; *38720*; *46894*; *46926*; *47316*; *48433*; *48825*; *49051*; *49107*; *49242*; *49544*; *57783*; *57843*; *58015.*

9. **Hampea trilobata** Standley, Contr. U.S. Natl. Herb. 23:787. 1923.

—Type: Mexico, Campeche, Apazote, 27 Dec 1900, *Goldman 488* (US!).

Illustrations: Fryxell, 1969:377, *fig. 5, L–M*; 379, *fig. 6, J–N.*

Dioecious shrubs or trees 2–7(–10) m tall, the foliage more or less brownish-puberulent. Leaves usually truncate, ovate, elliptic, rotund, or obtriangular, often weakly trilobulate, entire, acute or acuminate, discolorous, glabrate above, puberulent beneath, with a foliar nectary near base of midrib beneath. Pedicels 1.5–4 cm long, tomentose, slender; involucellar nectaries absent; bractlets of involucel 3, linear, 1–4 mm long, caducous before anthesis; calyx 4–7 mm long, usually truncate, densely tan-puberulent, torn in flower and reflexed in fruit; petals white, 1–1.5 cm long; filaments (of staminate flowers) 3–5 mm long; style (of pistillate flowers) recurved, the stigmatic lobes decurrent. Capsules globose to ovoid (often trigonally so), 1.5 cm long, woody, externally gray-green-puberulent, internally glabrous except for sparse hairs along suture of dehiscence; seeds 3 or 4 per locule, 4–5 mm long; Aug–Nov (sporadically at other times).

Hampea trilobata is found more or less throughout the Yucatán peninsula extending southward through Belize to northern Guatemala (the Petén region) and Chiapas, where it occurs in pockets of Lower Montane Rain Forest in savanna; Gulf Coastal Plain; to 250 m. Chiapas Collections: *Mz 7037* (MEXU, pf); *Mz 7088* (MEXU, pf); *Mz 8319* (MEXU, pf); 47206.

14. HERISSANTIA

Herissantia Medikus, Vorles. Churlpfälz. Phys.-Oekon. Ges. 4(1):244. 1788. —Type: *Herissantia crispa* (L.) Briz.

Gayoides (Endl.) Small, Fl. SE U.S. 764. 1903. —*Bastardia* Kunth sect. *Gayoides* Endl., Gen. Pl. 986. 1840. —*Abutilon* Miller sect. *Gayoides* (Endl.) A. Gray, Gen. Amer. Bor. 2:167, *t.126.* 1849. —Type: *Sida crispa* L.

Bogenhardia Reichb., Deut. Bot. Herb-Buch 1:200. 1841; 2:48. 1841. —Type: *Sida crispa* L.

Pseudobastardia Hassler, Bull. Soc. Bot. Genève, ser. 2. 1:209. 1909. —Type: *Sida crispa* L.

Herbs or subshrubs, erect or decumbent, pubescent or hirsute, sometimes viscid. Leaves ovate, cordate, dentate. Flowers solitary in the axils; involucel absent; calyx gamosepalous, 5-lobed, the lobes lanceolate or ovate; petals white or yellow; androecium included. Fruits oblate, inflated, pendulous; mericarps 10 or more, pubescent or hispid, with fragile walls, dehiscent, 1–3-seeded; seeds minutely scabridulous; $x = 7$.

A small American genus, one species of which is widely distributed from the United States to Argentina (including Chiapas), as well as in the Old World, where it is doubtless adventive. The other species are individually of restricted distribution.

Reference: Brizicky, G. 1968. *Herissantia, Bogenhardia,* and *Gayoides* (Malvaceae). J. Arnold Arbor. 49:278–279.

1. **Herissantia crispa** (L.) Briz., J. Arnold Arbor. 49:279. 1968.

—*Sida crispa* L., Sp. Pl. 685. 1753. —*Abutilon crispum* (L.) Medikus, Malvenfam. 29. 1787. —*Beloëre crispa* (L.) Shuttlew. ex A. Gray, Pl. Wright. 1:21. 1852. —*Gayoides crispum* (L.) Small, Fl. SE U.S. 764. 1903. —*Pseudobastardia crispa* (L.) Hassler, Bull. Soc. Bot. Genève ser. 2. 1: 211. 1909. —*Bogenhardia crispa* (L.) Kearney, Leafl. W. Bot. 7:120. 1954. —Lectotype (Borssum Waalkes, Blumea 14:161. 1966): Dillenius, Hort. Elth. *t.5.* 1732.

Sida amplexicaulis Lam., Encycl. 1:7. 1783 (non Vellozo, 1825). —Type: unknown.

Sida imberbis DC., Prodr. 1:469. 1824. —*Abutilon imberbe* (DC.) G. Don, Gen. Hist. 1:502. 1831. —*Gayoides imberbe* (DC.) Small, Fl. SE U.S. 764. 1903. —Type: Guadalupa et Sancto Domingo, *Bertero s.n.* (G—DC as microfiche! as photograph F—33389!).

Sida sessilis Vell., Fl. Flumin. 7:*t.27.* 1825. —Type: unknown.

Abutilon sessilifolium K. Presl, Reliq. Haenk. 2:113. 1835. ≡*Sida sessiliflora* [sphalm.] (K. Presl) D. Dietr., Syn. Pl. 4:836. 1847. —Type: Mexico, *Haenke s.n.* (PR!).

Illustrations: **Fig. 11**; Gray, Gen Amer. Bor. *pl. 126.* 1849; Martius, Fl. Bras. 12(3):*pl.70.* 1891; Wiggins, Fl. Baja Calif. *fig. 705,* p. 728. 1980; Fryxell, Syst. Bot. Monogr. 25:191. *fig. 48.* 1988; Fl. Lesser Antilles 5:219. *fig. 89.* 1989.

Perennial herbs or subshrubs, often trailing or decumbent, sometimes scandent, stellate-pubescent and usually also with long simple hairs. Leaves ovate, cordate, crenate, acute, petiolate below to subsessile above. Pedicels solitary in the axils, slender, recurved; calyx 4–7 mm long, reflexed in fruit; petals 6–11 mm long, white; androecium included, yellow. Fruits oblate, inflated, hirsute; mericarps 10–12, rounded, laterally compressed, 3-seeded, dorsally dehiscent; seeds 1.7 mm long, minutely scabridulous; $2n = 14$.

Frequently a weedy plant on roadsides and in disturbed ground in Tropical Deciduous Forest, Short-Tree Savanna, Thorn Woodland, Coastal Strand, and Shrub Associations; in Gulf Coastal Plain, Central Depression, and Pacific Coastal Plain; 0–1000 m or higher. U.S., Mex. (Baja C., Baja C.S., Son., Chih., Coah., N.L., Tam., Sin., Dgo., Zac., S.L.P., Nay., Jal., Aguasc., Gto., Qro., Hgo., Cma., Mich., Méx., D.F., Mlos., Pue., Ver., Gro., Oax., Tab., Yuc., Chis.), Bel., Hond., Nic., C.R., Pan., Antill., S.A. (Col., Ven., Ecu., Peru, Bol., Braz., Arg.). Chiapas Collections: *Cz&Av 4047* (XAL, pf); *F 3244* (CHAPA, DS, ENCB, GB, MEXU, MO, pf); *La 258* (DS, F); *La 2838* (DS, pf); *La 786* (DS); *EM 4857* (F); *EM 18559* (MEXU); *Mi 1876* (MEXU); *S&S 2082* (CAS, DS, US); *36899*; *37472*; *41496*; *46014*; *52888*.

15. HIBISCUS

Hibiscus L., Sp. Pl. 693. 1753; Gen. Pl. ed. 5. 310. 1754. —Lectotype (typus conserv.): *Hibiscus syriacus* L.

Subshrubs, shrubs, or trees, glabrescent, pubescent, or hispid. Leaves elliptic, lanceolate, ovate, or cordiform, sometimes lobed or parted, dentate or less commonly subentire. Pedicels long or short, usually solitary (sometimes fasciculate) in the axils of the leaves, sometimes aggregated apically; involucel present, manifest (rarely suppressed); involucellar bracts 8–10(–20), distinct or basally connate; calyx gamosepalous, 5-lobed; petals yellow (sometimes with a purple spot at base), lavender, red, or of other colors, sometimes large and showy; anthers numerous, the staminal column apically 5-dentate; styles always 5, free distally with capitate stigmas. Fruit a 5-celled capsule, glabrous or pubescent, dehiscent, ovoid or oblong; seeds several in each locule, glabrescent or hirsute.

A genus of about 200 species from the Americas, Africa, Asia, Australia, and elsewhere, of which 38 species occur in Mexico, among which are the introduced ornamentals *H. rosa-sinensis, H. mutabilis,* and *H. syriacus.*

References: Standley, P. C. 1923. Trees and shrubs of Mexico—*Hibiscus.* Contr. U.S. Natl. Herb. 23:777–782; Kearney, T. H. 1955. A tentative key to the North American species of *Hibiscus.* Leafl. W. Bot. 7:274–284; Bates, D. M. 1965. Notes on the cultivated Malvaceae. 1. *Hibiscus.* Baileya 13:56–96; Fryxell, P. A. 1980. A revision of the American species of *Hibiscus* sect. *Bombicella.* Techn. Bull. U.S.D.A. 1624.

a. Calyx lobes with prominent marginal costae and with prominent nectary on midrib of each calyx lobe (or nectary lacking in *H. costatus* but involucellar bracts bifurcate); bractlets of involucel often bifurcate (sect. *Furcaria*).
  b. Corolla salverform, deep red; stems, peduncles, and petioles densely aculeate, sometimes also pubescent; plants scandent to 10 or 20 m in forests .... 13. *H. uncinellus*
  bb. Corolla funnelform, lavender or yellow; aculeae on stems absent or nearly so; plants erect, 1–2 m tall.

c. Bracts of involucel simple; petals yellow with a maroon basal spot; calyx red becoming fleshy in fruit; cultivated and sometimes naturalized .... 11. *H. sabdariffa*

cc. Bracts of involucel bifurcate (or sometimes simple in *H. radiatus*); petals yellow or lavender; calyx green (or reddish in *H. acetosella*), coriaceous but not fleshy.

d. Calyx nectaries absent.

e. Leaves scabridulous, cordate-ovate to 3–5-angulate; foliar nectaries present; corolla lavender .... 2. *H. costatus*

ee. Leaves glabrate or sparsely aculeolate, deeply palmately parted with narrow lobes; foliar nectaries absent; corolla dark red or purple (cultivated and sometimes naturalized) .... 9. *H. radiatus*

dd. Calyx nectaries present.

[f. Stems and leaves usually red, glabrate; corolla yellow or yellow suffused with red; plants in garden cultivation .... 1. *H. acetosella*]

ff. Stems and leaves green, pubescent; corolla lavender; plants of swampy habitats .... 3. *H. furcellatus*

aa. Calyx lobes without marginal costae or central nectaries (or nectaries present in *H. pernambucensis* but involucel gamophyllous); bractlets of involucel never bifurcate.

g. Stipules prominent (15–26 mm long, 7–10 mm wide), enclosing the developing shoot, deciduous; bracts of involucel gamophyllous, ca. 8-toothed or -lobed, shorter than calyx; corolla 7–8 cm long, bright yellow fading orange; leaves coriaceous, discolorous, broadly ovate and deeply cordate, subentire; trees or large shrubs (sect. *Azanzae*) .... 6. *H. pernambucensis*

gg. Stipules subulate, not enclosing the shoot; bracts of the involucel distinct, or if connate below, the plant not arborescent; corolla 1–10 cm long, of various colors (not yellow except in certain cultivars of *H. rosa-sinensis*); leaves various; plants mostly shrubby.

h. Shrubs planted for ornament, not occurring outside of cultivation; corolla showy, sometimes double, usually > 4 cm long.

i. Leaves cordate, shallowly 3–5-lobed, about as broad as long, minutely pubescent; foliar nectaries absent; flowers white to rose (sect. *Venusti*) .... 5. *H. mutabilis*

ii. Leaves cuneate-elliptic to truncate-ovate, usually unlobed, longer than broad, glabrate; foliar nectaries present; corollas of various colors.

j. Calyx pubescent; staminal column included; corolla ca. 4 cm long, white, rose, or purple; bracts of involucel variable but subequal to calyx (sect. *Hibiscus*) ...... 12. *H. syriacus*

jj. Calyx glabrate; staminal column exserted (unless flower is double); corolla 5–10 cm long, of various colors; bracts of involucel shorter than calyx (sect. *Lilibiscus*).

k. Flowers pendent; petals complexly dissected, reflexed; involucel minute .... 10b. *H. rosa-sinensis* var. *schizopetalus*

kk. Flowers erect; petals entire or slightly erose, erect; involucel manifest .... 10a. *H. rosa-sinensis*

hh. Subshrubs of native vegetation; corolla sometimes brightly colored but small, < 4 cm long (sect. *Bombicella*).

l. Corolla rotate, 1–2 cm long, lavender (rarely white); capsule antrorsely strigose .... 7. *H. phoeniceus*

ll. Corolla tubular or funnelform, 2.5–4 cm long, lavender or red; capsule stellate-hispid.

m. Corolla tubular, bright red, 2.5–3.5 cm long; calyx 9–12 mm long; genitalia exserted; involucellar bracts linear .... 8. *H. poeppigii*

mm. Corolla funnelform, lavender, 3–4 cm long; calyx 16–19 mm long; genitalia subequal to corolla; involucellar bracts spatulate .... 4. *H. lavaterioides*

1. **Hibiscus acetosella** Welw. ex Hiern, Cat. Afr. Pl. 1:73. 1896.

—Type: Africa, Angola, Cuanze Norte, *Welwitsch s.n.* (BM). *Hibiscus eetveldeanus* DeWild. & Durand, Bull. Soc. Roy. Bot. Belgique 38(2):24. 1899. —Type: Africa, Congo, Monbanga, *Dewèvre s.n.* (BR!).

Illustration: Bates, 1965:79, *fig. 23B.*

Shrub 1–2 m tall, widely branched, the stems glabrate, reddish. Leaves reddish, long-petiolate, basally truncate, digitately 3–5-parted, the lobes lanceolate, coarsely crenate, subacute to obtuse, glabrate, with small nectary at base of midrib beneath. Peduncles in the axils of the leaves, 1–4-flowered, shorter than subtending petioles; pedicels ca. 1 cm long; bracts of involucel ca. 10, shorter than calyx, bifurcate, sparsely ciliate; calyx reddish, 2 cm long, hispid, with obscure nectaries on midribs of the calyx lobes; petals 2–4 cm long, yellow or red with a dark basal spot. Capsule slightly exceeding calyx, ovoid with a long attenuate beak, sparsely stellate-pubescent; $2n = 72$.

Introduced from Africa and seen occasionally in Chiapan gardens, probably not becoming naturalized in Chiapas. Chiapas Collections: none seen.

2. **Hibiscus costatus** A. Rich., Hist. Phys. Fl. Cuba Bot. Pl. Vasc. 138, *t.15.* 1845 [1841]; Hist. Fis. Cuba 49, *t.15.* 1845 [1841].

—Type: Cuba, *de la Sagra s.n.* (isotypes: K! US!).

Illustrations: A. Richard, loc. cit.; Brittonia 35:205, *figs. 1–2.* 1983.

Perennial herb or shrub 0.5–1.5 m tall, the stems more or less scabrous. Leaves petiolate, ovate or 3–5-angular, cordate, serrate, acute to acuminate, sparsely scabrous above and beneath, with nectary at base of midrib beneath. Peduncles solitary in the axils, longer than subtending petioles, scabrous, articulate above the middle; involucellar bracts 10–12, apically bifurcate, shorter than calyx, hispid; calyx 2–3 cm long, ⅓–½ divided, more or less hispid, without nectary on midrib, the costae often reddish; petals lavender, 5–7 cm long. Fruits capsular, 1.5–2 cm long, densely strigose, the hairs appressed and antrorse; seeds numerous; $2n = 36$.

Usually in locally wet soil, sometimes on the borders of marshes, in Tropical Rain Forest, Short-Tree Savanna, and Second-growth Forest; uncommon in Gulf Coastal Plain, Eastern Highlands, and Pacific Coastal Plain; 100 to 700(–1200) m. Mex. (Pue., Ver., Oax., Tab., Camp., Chis.), Guat., Bel., Hond., Nic., C.R., Pan., Antil. CHIAPAS COLLECTIONS: *C 10* (DS); *M&M 924* (LL); *26499*; *34942*; *46840*.

3. **Hibiscus furcellatus** Desr. in Lam., Encycl. 3:358. 1789.

—TYPE: *s.coll. s.n.* (P—LA as microfiche!).

Hibiscus diodon DC., Prodr. 1:449. 1824. —TYPE: Cayenne (G—DC as microfiche!).

ILLUSTRATION: Bates, 1965:79, *t.23A*.

Shrub to 2 m tall, the stems densely stellate-pubescent. Leaves petiolate, ovate to weakly 3–5-lobed, cordate to truncate, serrate to subentire, densely and minutely stellate-pubescent above and beneath, somewhat discolorous, with nectary at base of midrib beneath. Peduncles solitary in the axils, shorter than subtending petioles, stellate-pubescent, articulate at base (thus seemingly inarticulate); involucellar bracts 10–12, apically bifurcate, shorter than calyx, minutely stellate-pubescent and with a few long simple hairs; calyx 1.5–2.5 cm long, ⅓–½ divided, hispid, with nectary on midrib of each lobe; petals lavender, 5–7 cm long. Fruits capsular, ca. 2 cm long, densely strigose, the hairs appressed and antrorse; seeds numerous, 3 mm long, glabrous; $2n = 72$.

On swamp margins and river banks in Lowland Riparian Forest and Herbaceous Marsh; uncommon in Gulf Coastal Plain; 0 to 100 m. U.S., Mex. (Ver., Tab., Chis.), Bel., Hond., Nic., Pan., Antill., S.A. (Col. Ven., Sur., Peru, Bol., Braz., Arg.). CHIAPAS COLLECTIONS: *Cb 5282* (MEXU, pf); *Cb 8174* (MEXU, pf); *EM 3753A* (LL, MEXU); *EM 17399* (F).

4. **Hibiscus lavaterioides** Moric. ex Ser., Bull. Bot. 6:174. 1830.

—TYPE: Mexico, near Tampico, 20 Jan 1827, *Berlandier 127* (G; isotypes: BM! DS! L, UC! US!).

Hibiscus longipes Standley, J. Wash. Acad. Sci. 14:238. 1924. —TYPE: El Salvador, Finca San Nicolás, *Choussy 5* (US!).

ILLUSTRATIONS: Moricand, Pl. Nouv. Amér. *t.16*. 1836; Lemaire, Illustr. Hort. 3:*t.82*. 1856; Fryxell, 1980, p. 41, *fig. 22*.

Shrubs to 1.5 m tall, the stems stellate-pubescent. Leaves petiolate, cordate-ovate or weakly trilobed, 4–9 cm long, crenate-dentate to subentire, acute, stellate-pubescent above and beneath, with obscure nectary at base of midrib beneath. Pedicels solitary in the leaf axils, 2–8 cm long, stellate-pubescent; involucellar bracts 9, broadly spatulate, 8–10 mm long and 3 mm wide (in flower) to 12–15 mm long and 4.5–5.5 mm wide (in fruit), ca. half-divided, stellate-pubescent; petals usually 3–4 cm long, lavender, externally stellate-pubescent, ciliate on margins of claw, otherwise glabrous; staminal column glabrous, pallid, the filaments 2–4 mm long, the androecium subequal to petals; styles with scattered white hairs, the stigmas capitate, reddish, 0.7–0.8 mm diameter. Capsules 12–14 mm long, stellate-pubescent; seeds 3 mm long, sericeous, the hairs 5 mm long, chesnut-colored; $2n = 22$; Sep–Feb.

In understory of Evergreen Seasonal Forest, Tropical Deciduous Forest, and Second-Growth Forest; rare in Central Plateau and Central Depression; 500 to 1200 m. Mex. (Tam., Ver., Chis.), Bel., Guat., Salv., Hond., Antill.; sometimes cultivated as an ornamental. CHIAPAS COLLECTIONS: *47595*; *56852*.

5. **Hibiscus mutabilis** L., Sp. Pl. 694. 1753.

≡*Hibiscus sinensis* Miller, Gard. Dict. ed. 8. no. 2. 1768. —*Ketmia mutabilis* (L.) Moench, Methodus 617. 1794. —*Abelmoschus mutabilis* (L.) Wallich ex Hassk., Cat. Hort. Bot. Bogor. 198. 1844. —TYPE: Hort. Ups. (LINN—875.20, as microfiche!; isotype: S as microfiche!).

ILLUSTRATIONS: Hill, Exotic Bot. *pl. 26–27*. 1772. Ker, Bot. Reg. 7:589. 1821. Herter, Fl. Ilus. Uruguay, fasc. 13. *fig. 2160*. 1957. Molinari, Publ. Inst. Bot. Agric. [Buenos Aires] 7(fasc. 124):83, *pl. 19*. 1965.

Shrubs to 3 m tall, the stems stellate-pubescent with glandular hairs intermingled. Leaves long-petiolate, palmately 5–7-lobed, the lobes shallow and triangular, cordate, serrate-crenate, acute to acuminate, minutely stellate-pubescent beneath, sparsely so above, somewhat discolorous. Peduncles solitary in the axils, often aggregated apically in few-flowered inflorescence, articulated above the middle; involucellar bracts 8–10, narrowly linear-lanceolate, shorter than calyx; calyx 2.5–3 cm long, > half-divided, stellate-puberulent and somewhat glandular; petals white fading pink, ca. 4 cm long, the flowers sometimes double by petaloidy of the stamens. Fruits capsular, ca. 2 cm long, hispid, internally pilose on suture margins; seeds numerous, ca. 2 mm long, patently hirsute on half away from hilum, the other half glabrous, the hairs 2 mm long; $2n = 84, 92, 100, 110, 120$.

Native to China and widely cultivated in tropical, subtropical, and sometimes temperate regions; often found in gardens in Chiapas and other tropical and subtropical regions. CHIAPAS COLLECTIONS: *F 2590* (pf); *V 2346* (XAL, pf).

6. **Hibiscus pernambucensis** Arruda, Diss. Pl. Brazil 44. 1810.

—*Hibiscus tiliaceus* L. subsp. *pernambucensis* (Arruda) Castell., Sellowia 19:50. 1967. —TYPE: Brazil, Pernambuco [the Arruda herbarium is not known to be extant].

Hibiscus arboreus Ham., Prodr. Pl. Ind. Occid. 49. 1825. —TYPE: Guadeloupe, *Desvaux s.n.* (P).

ILLUSTRATIONS: Robyns, Ann. Missouri Bot. Gard. 52:503, *fig. 1*. 1965; Centro Inv. Ecol. Sureste (Tapachula) Bol. Inf. 3: 8. 1977.

Shrubs or trees 1–6 m tall, minutely stellate-pubescent to glabrate. Leaves petiolate, broadly ovate, deeply cordate, entire or minutely denticulate, acuminate, coriaceous, soft-puberulent beneath, markedly discolorous, with 1–5 nectaries at base of principal veins beneath; stipules prominent, more or less oblong, 1.5–2.5 cm long, up to 1 cm broad, enclosing bud, densely puberulent, deciduous. Peduncles solitary in the axils, usually congested at the apices of the branches, usually 0.5–3 cm long, minutely stellate-pubescent; involucel gamophyllous, 8–20-toothed, densely puberulent, at least half the length of the calyx, the teeth lanceolate, 6–10 mm long; calyx ca. 2.5 cm long, > half-divided, with nectary on midrib of each calyx lobe. Petals 4–6 cm long, bright yellow fading orange; staminal column ca. 3 cm long, staminiferous throughout; stigmas 5, capitate. Fruit capsular, ca. 2 cm long, antrorsely pubescent; seeds 4 mm long, minutely papillate.

In brackish water, Mangrove Swamp and Lowland Riparian Forest; locally common on Pacific Coastal Plain; at sea level. Mex. (Tam., Nay., Jal., Cma., Mich., Gro., Ver., Oax., Tab., Q.Roo, Chis.), Bel., Hond., Salv., Nic., C.R., Pan., Antill., S.A. (Col., Ven., Sur., Ecu., Peru, Braz.). Chiapas Collections: *Bod s.n.* (pf); *X 16401* (CHAPA, pf); *J 1296* (F); *EM 2730* (F, LL, MO).

The present species is commonly referred to in the literature as *Hibiscus tiliaceus* L., but *H. tiliaceus* is an Old World species similar to but clearly distinguishable from *H. pernambucensis,* a New World species.

7. **Hibiscus phoeniceus** Jacq., Hort. Bot. Vindob. 3:11, *t.14.* 1776.

—Type: *Jacquin s.n.* (BM!).

Hibiscus violaceus Brandegee, Zoe 5:211. 1905 (non Forbes, 1833). —Type: Mexico, Sinaloa, 1 Oct 1904, *Brandegee s.n.* (UC!; isotypes: GH! US!).

Hibiscus iochromus Brandegee, Univ. Calif. Publ. Bot. 3:385. 1909. —Type: Mexico, Puebla, Jul 1908, *Purpus 3257* (UC!; isotypes: BM! F! MO! NY! US!).

Kosteletzkya bracteosa M. E. Jones, Contr. W. Bot. 15:147. 1929. —Type: Mexico, Sinaloa, San Blas, 1 Feb 1927, *Jones 22863* (POM!).

Illustrations: Jacquin, Hort. Bot. Vindob. 3:*pl. 14.* 1776. Ker, Bot. Reg. 3:230. 1817. Fryxell, 1980, p. 8, *fig. 2*; Fl. Lesser Antilles 5:219. *fig. 90.* 1989.

Shrubs 1–1.5 m tall, the stems green, sparsely stellate-pubescent to glabrate. Leaves short-petiolate, lanceolate to ovate, sometimes 3-lobed, subcordate to truncate, serrate-crenate, acute, sparsely stellate-pubescent to glabrate. Peduncles solitary in the axils, 0.5–6 cm long; involucellar bracts 8–9, equaling or exceeding the calyx, linear, persistent; calyx 6–10 mm long, ca. ⅔-divided, ciliate-margined, the lobes acute or acuminate; petals lavender (sometimes white), 1–2 cm long, the corolla rotate; staminal column glabrous, pallid, included, the anthers yellowish; styles 5, slender, glabrous; stigmas capitate, purplish. Capsule 9–13 mm long, antrorsely strigose, fully dehiscent; seeds 2.5 mm long, densely sericeous, the hairs to 4 mm long, brownish; $2n = 22$.

In Tropical Deciduous Forest and Shrub Associations; uncommon in Central Depression and Sierra Madre; 800 to 1000 m. Mex. (Son., Chih., Tam., Sin., Jal., Aguasc., Méx., Gro., Pue., Ver., Oax., Chis.), Guat., Salv., Hond., Nic., C.R., Pan., Antill., S.A. (Col., Ven., Guy., Sur., Ecu., Peru). Chiapas Collections: *F 3276* (CHAPA, MEXU, pf); *9949*; *31217*; *36722.*

8. **Hibiscus poeppigii** (Sprengel) Garcke, Jahresber. Naturwiss. Vereins Halle 2:133. 1850.

—*Achania poeppigii* Sprengel, Syst. Veg. 3:100. 1826. —*Pavonia poeppigii* (Sprengel) Steudel, Nomencl. Bot. ed. 2. 2:279. 1841. —*Malache poeppigii* (Sprengel) Kuntze, Revis. Gen. Pl. 1:71. 1891. —*Malvaviscus poeppigii* (Sprengel) G. Don, Gen. Hist. 1:475. 1831. —Type: Cuba, without locality, 1824, *Poeppig s.n.* (isotype: MO!).

Malvaviscus floridanus Nutt., J. Acad. Nat. Sci. Philadelphia 5:89. 1834. *Hibiscus floridanus* (Nutt.) Shuttlew. ex A. Gray, Smithsonian Contr. Knowl. 3(art. 5, Pl. Wright. 1):22. 1852. —Type: United States, Florida, Key West, *Peale s.n.* (PH!).

Hibiscus bancroftianus Macfad., Fl. Jamaica 1:70. 1837. —Type: Jamaica, St. Anns, *Rose s.n.* (specimen unknown).

Hibiscus truncatus A. Rich., Hist. Phys. Cuba Pl. Vasc. 144, *t.16.* 1845 [1841]; Hist. Fis. Cuba Bot. 53, *t.16.* 1845 [1841]. —Type: Cuba, *de la Sagra s.n.* (P?).

Illustrations: A. Richard, loc. cit.; Fryxell, 1980, p. 29, *fig. 15*; Fryxell, Syst. Bot. Monogr. 25:201. *fig. 50.* 1988.

Shrubs 1–2 m tall, sparsely pubescent. Leaves short-petiolate, ovate or slightly 3-lobed, truncate or rounded, dentate, acute, sparsely stellate-pubescent beneath, also above but the hairs often simple. Peduncles solitary in the axils, articulated above the middle, sparsely scabridulous; involucellar bracts 8–10, subulate-linear, shorter than calyx, hispid; calyx 9–12 mm long, stellate-pubescent, ca. half-divided; petals red, 1.5–3.5 cm long, erect, the corolla flaring; staminal column exserted, pallid glabrous; styles 5, glabrous. Fruit capsular, 8–12 mm long, stellate-pubescent; seeds 3 mm long, sericeous, the hairs 3–4 mm long, brownish.

In Tropical Deciduous Forest and Shrub Associations; common in Central Depression; 400 to 800(–1100) m. U.S., Mex. (Tam., S.L.P., Camp., Yuc., Q.Roo, Chis.), Guat., Antill. Chiapas Collections: *Be 165* (MEXU); *G 643* (BM, GH, K); *Go 756* (US); *Mi 5316* (MEXU); *Mi 5676* (DS); *9637*; *10008*; *19768*; *20138*; *25156*; *37407*; *39855*; *41469*; *42106*; *49082*; *50333.*

9. **Hibiscus radiatus** Cav., Diss. 3:150, *t.54.f.2.* 1787.

—Type: cult. in Paris from seeds collected by Banks, *Cavanilles s.n.* (P—JU no. 12373 as microfiche!; isotype: MA?).

Illustrations: Cavanilles (loc. cit.) *t.54.f.2.* 1787; Lindley, Bot. Reg. 9, *t.878.* 1823; Bates, 1965:56, *t.19, 23C*; Curt. Bot. Mag. *t.1911, 5098.*

Herb or subshrub to 1.5 m tall, erect or decumbent, the stems sometimes with urticating hairs, glabrescent. Leaves long-petiolate, basally truncate, deeply 3–5-parted, the lobes lanceolate, coarsely serrate, acute, subglabrous. Pedicels solitary in the leaf axils, 2–5(–15) mm long; involucellar bracts 8–10, distinct, 10–15 mm long, linear, hispid, spreading in flower to reflexed in fruit, bifurcate (rarely simple); calyx 1.5–2.5(–3) cm long, 5-lobed, accrescent, with stiff urticating hairs on the nerves; corolla dark red (sometimes yellow) with a dark throat, 4–6 cm long. Capsules ovoid, densely yellowish-hispid, shorter than the calyx; seeds 4 mm long, angularly reniform, scabridulous; $2n = 72$.

Introduced as a garden ornamental and occasionally naturalized; rare in gardens; 0 to 1000 m. Probably from tropical Asia, often cultivated in Mex. (Nay., Méx., Gro., Ver., Chis.), Hond., Nic., Pan., and throughout the tropics. Chiapas Collections: *EM 18177* (DS); *EM 18181* (MEXU).

10a. **Hibiscus rosa-sinensis** L., Sp. Pl. 694. 1753.

≡*Hibiscus festalis* Salisb., Prodr. Stirp. Chap. Allerton 383. 1796. —Lectotype (Borssum Waalkes, Blumea 14:72. 1966): herb. Hermann, vol. 3, fol. 4, *Linn. no. 260* (BM).

Illustrations: Hill, Exotic Bot. *pl. 24–25.* 1772; Curtis, Bot. Mag. 5:*pl. 158.* 1792; Loddiges, Bot. Cab. 6:*pl. 513.* 1821; 10:*pl. 932, 963.* 1824; 20:*pl. 1995.* 1833; Bojer, Bot. Mag. 59:*pl. 3144.* 1832; Lindley, Bot. Reg. 21:*pl. 1826.* 1836; Bailey, Stand. Cyclop. Hort. 2:1487, *fig. 1834.* 1939; Camargo, Cat. Ilustr. Pl. Cundinamarca 4:161, *fig. 57.* 1969; Herter, Fl. Ilus. Uruguay, fasc. 13, *fig. 2158.* 1957; Molinari, Publ. Inst. Bot. Agric. [Buenos Aires] 7(fasc. 124):62, *fig. 22.* 1965.

Shrubs 1–3(–4) m tall, sparsely puberulent to glabrate. Leaves ovate or lanceolate, truncate or cuneate, serrate, acute, sparsely puberulent to glabrate, concolorous. Peduncles solitary in the axils, articulated above the middle, exceeding the subtending petioles; involucellar bracts ca. 8, narrowly lanceolate, ca. half length of calyx; calyx 2–4 cm long, > half-divided, the lobes lance-triangular; petals usually 6–10 cm long, the flowers single or double in a wide variety of colors (commonly red); androecium more or less exserted, the filaments often 5–10 mm long. Fruits seldom produced; $2n = 36$ to 172, highly variable with very irregular chromosome pairing.

Pantropical and subtropical in cultivation, unknown in the wild, of unknown origin; one of the best known and showiest of ornamental shrubs; highly variable with many colors, both single and double flowers, and sometimes with variegated foliage; intergrades with the following (var. *schizopetalus*) giving plants with smaller leaves, dissected petals, and pendent flowers (e.g. *Breedlove 20045,* DS). Chiapas Collections: *Cz 3504* (XAL, pf); *Hi s.n.* (ENCB, pf); *La 718* (DS, US); *La 2147* (DS); *EM 17953* (F); *T 2642* (DS, F, LL); *22850*; *23494*; *23505.*

10b. **Hibiscus rosa-sinensis** L. var. **schizopetalus** Dyer, Gard. Chron. n.s. 11:568. 1879.

—*Hibiscus schizopetalus* (Dyer) J. D. Hook., Bot. Mag. *t. 6524.* 1880. —Lectotype (Cheek, Taxon 38:261. 1989): Kenya, Mombasa [Wanika Hills], Sept 1873, *Kirk s.n.* (K).

Illustrations: Hooker, Bot. Mag. 106:*pl. 6524.* 1880; Planchon, Fl. Serres Jard. Eur. 23:*pl. 2397–2398.* 1880; Bailey, Stand. Cycl. Hort. 2:1486, *fig. 1833.* 1939, reprinted by Bates, 1965:123, *fig. 35*; Herter, Fl. Ilus. Uruguay, fasc. 13, *fig. 2166.* 1957; Heywood, Flow. Pl. World 94. 1978; Molinari, Publ. Inst. Bot. Agric. [Buenos Aires] 7(fasc. 124): 78, *fig. 31.* 1965.

Shrub to 3 m, glabrate. Leaves short-petiolate, lanceolate, serrate, acute, glabrate. Peduncles solitary in the axils, slender, exceeding the subtending leaves, articulated at or above the middle, the flowers pendent; involucellar bractlets reduced to subulate teeth ca. 1 mm long; calyx cylindrical, 1.5–2 cm long; petals reflexed, usually red or pink, 5–6 cm long, complexly dissected, the ultimate segments obovate, obtuse; androecium exserted, the filaments 5–8 mm long; styles 5, slender, exceeding androecium. Fruits seldom produced; $2n = 42$–45.

In cultivation in tropical regions, of East African origin; intergrades with *H. rosa-sinensis,* the many forms propagated vegetatively. Chiapas Collections: *Hi 108* (ENCB); *23541.*

11. **Hibiscus sabdariffa** L., Sp. Pl. 695. 1753.

—Type: problems of typification not resolved.

Hibiscus fraternus L., Pl. Surin. 12. 1775. —Type: Surinam, *Dalberg s.n.* (LINN—875.36, as microfiche!; isotype: S, as microfiche!).

Illustrations: Bertoloni, Flor. Guatim. *pl. 10.* 1840; Bates, 1965:79, *fig. 23E*; Molinari, Publ. Inst. Bot. Agric. 7(fasc. 124):73, *fig. 28,* 1965; Yearb. Agric. 1909:381, *pl. 35.* 1910.

Subshrub 1–3 m tall, glabrate. Leaves petiolate, ovate to deeply digitately parted, truncate to cuneate, serrate, glabrate, with nectary at base of midrib beneath. Peduncles solitary, axillary, shorter than subtending petiole, articulated at or near the base; involucellar bracts ca. 8, connate basally, lanceolate, shorter than the calyx; calyx 1.5–3 cm long, somewhat hispid to glabrate, with nectary on midrib of each lobe, accrescent and fleshy in fruit, bright red; petals yellow with maroon basal spot. Fruits capsular, 2 cm long, antrorsely hispid; seeds numerous, 4 mm long, minutely scabridulous; $2n = 72$.

An African species, introduced in cultivation, sometimes naturalized in abandoned fields and disturbed ground; Gulf Coastal Plain, Eastern Highlands, Central Depression, and Pacific Coastal Plain; 0 to 1000 m. Chiapas Collections: *EM 17330* (DS, F); *23504*; *42378*; *54171.*

Grown primarily for its fleshy calyces, which are dried and well known in Mexican markets ("flor de Jamaica"), and used to produce beverages, condiments, and confections.

12. **Hibiscus syriacus** L., Sp. Pl. 695. 1753.

—*Ketmia syriaca* (L.) Scopoli, Fl. Carniol. ed. 2. 2:45. 1772. ≡*Ketmia syrorum* Medikus, Malvenfam. 45. 1787. ≡*Ketmia arborea* Moench, Methodus 617. 1794. ≡*Hibiscus floridus* Salisb., Prodr. Stirp. Chap. Allerton 383. 1796. ≡*Hibiscus acerifolius* Salisb., Parad. Lond. *t.33.* 1805 (non DC., 1824). —Type: "syriacus 9" (LINN—875.24, as microfiche!; isotype: S, as microfiche!).

Hibiscus rhombifolius Cav., Diss. 3:156, *t.69.f.3.* 1787. —Type: India orient. *Sonnerat s.n.* (P—LA, as microfiche!).

Illustrations: Curtis, Bot. Mag. 3:*pl. 83.* 1790; Salisbury, Parad. Lond. *t.33.* 1805; Paxton's Bot. Mag. 2:3. 1836; Bailey, Stand. Encycl. Hort. 2:1487, *fig. 1835.* 1939, reprinted by Bates, 1965:108. *fig. 30*; Herter, Fl. Ilus. Uruguay, fasc. 13, *fig. 2167.* 1957; Radford et al., Man. Vasc. Fl. Carol. 705. 1962; New Britton and Brown, Ill. Fl. 2: 535. 1968; Steyermark, Fl. Missouri *pl. 253.* [no date]; Molinari, Publ. Inst. Bot. Agric. [Buenos Aires] 7(124):84, *fig. 35.* 1965.

Shrubs to 3 m tall, minutely stellate-puberulent to glabrate. Leaves short-petiolate, cuneate-rhomboid to somewhat 3-lobed, coarsely serrate, acute, glabrate, with nectary at base of midrib beneath. Peduncles solitary or paired in the axils, shorter than to somewhat longer than subtending petioles, minutely pubescent; involucellar bracts ca. 8, linear-lanceolate, shorter than to longer than the calyx; calyx 1–1.5 cm long, broadly rounded, half-divided or less; petals 3–4 cm long, the flowers single or double in a wide variety of colors; androecium included. Fruits capsular.

Introduced in cultivation from the Old World, unknown in the wild; in Mexico rare in gardens, not naturalized, often at relatively higher elevation than other ornamental species of *Hibiscus,* since *H. syriacus* is frost-tolerant. Chiapas Collections: *EM 17953* (MEXU).

13. **Hibiscus uncinellus** DC., Prodr. 1:449. 1824.

—Lectotype (Fryxell and Wilson, Brittonia 38:110. 1986): Icones Florae Mexicanae s.n.! (Torner Collection no. 6331.1422, Hunt Institute).

Illustrations: **Fig. 12**; Fryxell and Wilson, Brittonia 38:109, *fig. 1.* 1986; Fryxell, Syst. Bot. Monogr. 25:231. *fig. 55.* 1988.

Shrubs, often scandent by means of prickles, 1–3 m tall or climbing even higher as a scandent vine when supported by trees; stems prickly, usually also hirsute. Leaf blades basally cordate, serrate, palmately 5–7-nerved, deeply 3–5-lobed, the central lobe lanceolate-acuminate, constricted at the base, the sinuses open, more or less rounded, hirsute above and beneath, the lower surface with retrorse prickles on main veins toward base, with a small nectary at base of midrib; petioles more than half length of blade, retrorsely prickly. Pedicels solitary in the axils, more or less equaling the subtending petioles, both prickly and hirsute; involucel of ca. 10 strongly bifurcate bracts; calyx 2–2.5 cm long, 5-lobed, each lobe with prominent midrib and marginal costae, each midrib with a central nectary; petals scarlet, reflexed to form a salverform corolla 6–10 cm diameter; androecium glabrous, reddish, appearing exserted because of the reflexion of the petals; styles 5, hirsute; stigmas capitate. Capsule antrorsely hispid, ovoid, dehiscent; seeds angularly reniform, 4.5 mm long, papillate; $2n = 72$.

Often scandent in Montane Rain Forest, Pine-Oak-Liquidambar Forest, and in Second-Growth Forest and disturbed sites; common in the Northern Highlands, Eastern Highlands, Central Plateau, and Sierra Madre; (400–)1000 to 1700 m. Mex. (Sin., Nay., Jal., Pue., Ver., Gro., Oax., Tab., Chis.), Guat. Chiapas Collections: *Cb 3718* (CAS, MEXU); *Cb 6070* (MEXU, pf); *Cz 3480* (XAL, pf); *Cro 46667* (MO); *De et al. 844* (CHAPA, DS, MO); *F 2589* (CHAPA, pf); *K 7396* (CHAPA, pf); *K 73128* (CHAPA, DS, pf); *EM 3977* (GH, MEXU, MO); *EM 15253* (F, MEXU); *EM 17404* (DS, F, MEXU); *N 3275* (US); *N 3814* (US); *R&R&M 1171* (LL); *S&S 2206* (US); *T&L 7219* (DS); *T&L 21419* (DS); *T&L 41271* (DS); *T 122* (DS); *T 1176* (DS, LL); *T1691* (DS); *T 1796* (DS); *T. 2473* (DS, LL); *T 3563* (DS, F); *T 3694* (DS); *T 4024* (DS); *T 4465* (MEXU, pf); *U 2206* (GH); *U 2213* (GH); *Z 289* (DS); *6141*; *7409*; *7563*; *8856*; *10944*; 10988; *11084*; *14741*; *14881*; *21419*; *21769*; *24053*; *27802*; *29605*; *53041*; *56846*; *56963*.

16. HOCHREUTINERA

Hochreutinera Krapov., Darwiniana 16:225. 1970. —Type: *Hochreutinera hasslerana* (Hochr.) Krapov.

Subshrubs with scattered to dense stellate and simple pubescence. Leaves ovate, deeply cordate, serrate-crenate, acute or acuminate, more or less discolorous. Flowers solitary in the axils or in terminal racemes or lax panicles; involucel absent; calyx pubescent, half or more divided, the lobes more or less cordate, acuminate, more or less accrescent; petals yellow, equaling calyx to 3 times as long as calyx; androecium glabrous, pallid, included. Fruits schizocarpic, pubescent, blackish at maturity; mericarps apically acute or aristate, dehiscent, with two minute spines or knobs at base on dorsal angle, 5-seeded, with endoglossum positioned more or less below the lowermost seed; seeds essentially glabrous (but often sparsely and minutely scabridulous); $x = 7$.

Hochreutinera is a genus of two species, one Mexican, the other from Paraguay and Argentina, distinguished by its 5-seeded mericarps with an endoglossum located *below* the seeds.

References: Krapovickas, A. 1970. Dos géneros nuevos de Malváceas: *Dirhamphis* y *Hochreutinera,* con notas sobre las afines *Briquetia* y *Neobrittonia.* Darwiniana 16:219–232; Fryxell, P. A. 1976. New species and new combinations in *Briquetia* and *Hochreutinera,* and a discussion of the *Briquetia* generic alliance (Malvaceae). Brittonia 28:318–325.

1. **Hochreutinera amplexifolia** (DC.) Fryx., Brittonia 28:322. 1976.

—*Sida amplexifolia* DC., Prodr. 1:469. 1824. —*Abutilon amplexifolium* (DC.) G. Don, Gen. Hist. 1:502. 1831. —Type: Icones Florae Mexicanae s.n.! (Torner Collection acc. no. 6331.1731, Hunt Institute).

Illustrations: **Fig. 13**; Fryxell, 1976:323, *fig. 3*; Fryxell, Syst. Bot. Monogr. 25:235. *fig. 57.* 1988.

Subshrubs 1–2 m tall, moderately hirsute mostly with simple hairs 1–2 mm long. Leaves long-petiolate below to sessile and amplexicaul immediately below the inflorescence, ovate, deeply cordate, serrate, acuminate, hirsute above and beneath to glabrate, more or less discolorous. Flowers solitary in the axils or usually in terminal racemes or lax panicles; calyx hirsute, 6–8 mm long in flower to 12 mm long in fruit, > half-divided; petals yellow, 12–21 mm long; staminal column glabrous, pallid, ca. 3 mm long, the filaments 3–5 mm long, the anthers yellow. Fruits schizocarpic, glandular pubescent; mericarps 10–12, blackish at maturity, 1–1.5 cm long, apically acute (rarely rounded), with 2 vestigial knobs basally at dorsal angle, 5-seeded, with glandular-pubescent endoglossum; seeds 2.5 mm long, essentially glabrous; Aug–Jan.

Understory in Evergreen Seasonal Forest and Tropical Deciduous Forest; uncommon in Northern Highlands, Central Depression, and Sierra Madre; 250 to 1000 m. Mex. (Son., Tam., Sin., Dgo., Nay., Jal., Cma., Mich., Ver., Gro., Oax., Chis.), Guat., Salv. Chiapas Collections: *Cz 3520* (XAL, pf); *39085*; *48594*; *60270*.

17. KEARNEMALVASTRUM

Kearnemalvastrum D. Bates, Brittonia 19:229. 1967. —Type: *Kearnemalvastrum lacteum* (Aiton) D. Bates.

Erect subshrubs, stellate-pubescent. Leaves petiolate, usually palmately 3–7-lobed (aceriform), truncate to cordate, crenate, acute. Flowers in congested or lax cymes, aggregated into paniculate infloresceses; involucel of 3 inconspicuous linear bractlets; calyx gamosepalous, 5-lobed; petals white, equaling or slightly exceeding the calyx, androecium pallid, included. Fruits schizocarpic, more or less glabrous, oblate; mericarps 7–13, blackish at maturity, indehiscent, smooth, 1-seeded; seeds glabrous; $x = 16$.

A genus of two species occurring from Mexico to Costa Rica, with disjunct populations in Colombia, principally at elevations of 1500 to 3100 m.

Reference: Bates, D. M. 1967. *Kearnemalvastrum,* a new genus of Malvaceae. Brittonia 19:227–236.

a. Calyx broadly campanulate, deeply 5-lobed; involucellar bracts shorter than calyx; flowers manifestly pedicellate in lax panicles .... 1. *K. lacteum*

aa. Calyx more or less tubular, the lobes more or less equaling the tube; involucellar bracts equaling or longer than calyx; flowers subsessile in dense glomerules .... 2. *K. subtriflorum*

1. **Kearnemalvastrum lacteum** (Aiton) D. Bates, Brittonia 19:231. 1967.

—*Malva lactea* Aiton, Hort. Kew. 2:448. 1789. —*Malvastrum lacteum* (Aiton) Garcke in Braun & Bouché, Ind. Sem. Hort. Bot. Berol. 17. 1866. —Type: plant raised in the Royal Botanic Gardens, Kew, 1781, *s.coll.* (BM, as photo BH, US!).

Malva vitifolia Cav., Icon. Pl. 1:13, *t.20.* 1791 (non Cerv. ex Steudel, 1841, nec Sessé & Mociño, 1894). —*Malvastrum vitifolium* (Cav.) Hemsley, Biol. Centr.-Amer. Bot. 1:100. 1879. —Type: plant raised in the Botanic Garden, Madrid, *s.coll.* (MA as photo BH, BM! K! US!; isotypes: BM, F).

Sida schmitzii Turcz., Bull. Soc. Imp. Naturalistes Moscou 36:565. 1863. —Type: Mexico, Valley of Mexico, *Schmitz 223* (KW!; isotype: BM!).

Illustrations: Bates, 1967:230, *fig. 2B*; Cavanilles, Icon. *pl. 20.* 1791.

Subshrub 1–3 m tall, widely branched, pubescent or glabrescent. Leaves petiolate, 3–7-lobed, truncate or cordate, crenate, acute, stellate-pubescent to glabrate. Flowers in lax terminal panicles with or without leaves, the individual pedicel longer than the calyx; involucellar bracts 2–3.5 mm long, shorter than the calyx; calyx 5–7 mm long, deeply lobed, stellate-pubescent; petals white, 4–7.5 mm long; staminal column conical, the filaments longer than the column. Fruits schizocarpic, 5 mm diameter, oblate; mericarps 10–13, smooth, glabrous; seeds solitary, glabrous; $2n = 32$; principally Sep–Dec (but also at other seasons).

On roadsides and in disturbed areas and in understory of Montane Rain Forest, Evergreen Cloud Forest, Pine-Oak-Liquidambar Forest, and Pine-Oak Forest; common in Central Plateau and Sierra Madre; 1300 to 2800 m. Mex. (S.L.P., Gto., Qro., Hgo., Mich., Méx., D.F., Pue., Ver., Oax., Chis.), Guat., S.A. (Col.). Chiapas Collections: *Lm 3725* (US); *La 613* (DS, LL); *La 1775* (DS); *T 848* (F, LL); *T 1081* (DS, LL); *T 1249* (DS, F); *T 1326* (DS, LL); *T 1824* (DS, F); *7862*; *15377*; *23405*; *29243*; *31055*; *40916*; *50119*.

2. **Kearnemalvastrum subtriflorum** (Lagasca) D. Bates, Brittonia 19:232. 1967.

—*Malva subtriflora* Lagasca, Gen. Sp. Pl. 21. 1816. —*Malvastrum subtriflorum* (Lagasca) Hemsley, Biol. Centr.-Amer. Bot. 1:100. 1879. —Type: plant cultivated in Botanic Garden, Madrid (MA?).

Malva ribifolia Schldl., Linnaea 11:351. 1837 (non Viviani, 1825). *Malvastrum ribifolium* (Schldl.) Hemsley, Biol. Centr.-Amer. Bot. 1:100. 1879. —Type: Mexico, [Hidalgo,] Mineral del Monte, *Ehrenberg 283* (HAL; isotype: B as photograph F—9323!).

Malva mexicana Schauer, Linnaea 20:724. 1847 (non Sessé & Mociño, 1889). —*Malvastrum mexicanum* (Schauer) Hemsley, Biol. Centr.-Amer. Bot. 1:99. 1879. —Type: Mexico, Hidalgo, about Zimapán, *Aschenborn 614* (B—destroyed as photograph F—18273!).

Malvastrum schaffneri S. Watson, Proc. Amer. Acad. Arts 25:143. 1890. —Lectotype (Bates, loc. cit.): Mexico, Coahuila, Carneros Pass, 6 Sep 1889, *Pringle 2849* (GH!; isotypes: F! as photograph F—56660! NY! US! VT!).

Malvastrum greenmanianum Rose, Contr. U.S. Natl Herb. 5:180. 1899. —Type: Mexico, Distrito Federal near Contreras, 19 Oct 1896, *Pringle 6582* (US!; isotypes: BM! BR! CM! F! as photograph F—56661! GH! GOET! K! MEXU! MO! NY! PH! UC! US! VT! pf!).

Illustrations: **Fig. 14**; Bates, 1967:230, *fig. 2A*; Fryxell, Syst. Bot. Monogr. 25:244. *fig. 61.* 1988.

Subshrubs 0.5–2.5 m tall, strictly erect and little-branched, stellate-pubescent. Leaves petiolate, 3–5-lobed, cordate to truncate, crenate, acute, stellate-pubescent, somewhat discolorous. Flowers in dense axillary glomerules, terminally forming a congested more or less interrupted spiciform inflorescence; flowers subsessile, the pedicel shorter than the calyx; involucellar bracts 3.5–6 mm long, more or less equaling calyx; calyx 4–6 mm long, stellate-pubescent, < half-divided; petals white, 3.5–6 mm long; staminal column more or less cylindrical, the filaments shorter than the column. Fruits schizocarpic, 5 mm diameter, oblate; mericarps 8–10, smooth, glabrous; seeds solitary, glabrous; $2n = 32$; principally Sep–Dec (but also at other seasons).

Roadsides and disturbed areas in Pine-Oak Forest; uncommon in the Central Plateau and Sierra Madre; 1400 to 2400 m. Mex. (Coah., Tam., S.L.P., Jal., Hgo., Mich., Méx., D.F., Mlos., Pue., Ver., Oax., Chis.), Guat., Hond., C.R. Chiapas Collections: *F&L 3331* (MEXU, pf); *39797*; *41452*.

18. KOSTELETZKYA

Kosteletzkya K. Presl, Reliq. Haenk. 2:130, *t.70.* 1835, nom. conserv. —Type: *Kosteletzkya sagittata* K. Presl. [In the list of conserved generic names appended to the International Code of Botanical Nomenclature, *Kosteletzkya hastata* Presl is given as the type species, following Britton and Brown, 1913. This choice is incorrect, however, since Bentham (Pl. Hartw. 114. 1843) had already lectotypified *Kosteletzkya* indirectly with *K. sagittata,* and his choice must be followed according to Article 8. (Bentham combined Presl's four species into one and chose the name *K. sagittata* for it.) The lectotype was given correctly as *K. sagittata* by Hutchinson (Gen. Fl. Pl. 2:542. 1967).

Stout herbs or shrubs, often with hispid vesture, frequently growing in moist habitats. Leaves narrowly lanceolate, ovate, cordate, hastate, aceriform, or digitately parted, with serrate margins, usually coarsely stellate-pubescent, sometimes with long simple hairs in addition. Flowers solitary in the axils or aggregated in terminal inflorescences (panicles or racemes); involucel of 6–10 linear bractlets, usually hispid, much shorter than to equaling the calyx; calyx deeply 5-lobed; corolla rotate or tubular, whitish, yellow, or pink; androecium equaling petals or (in tubular-flowered species) manifestly exserted; styles 5, exceeding androecium, free distally; stigmas capitate. Capsules depressed, 5-angled or -winged, usually scabrid, loculicidally dehiscent, the 5 locules each 1-seeded; seeds reniform; $2n = 38$.

Kosteletzkya is a genus of about 17 species, occurring in the New World in North, Central, and South America, and in the Old World from Africa and Madagascar to Europe and Malesia. Its principal diversification is in Mexico (8 species) and in Africa (8 species). Only one species occurs in Chiapas, the widely distributed and highly variable *K. depressa.*

References: Standley, P. C. 1923. Trees and shrubs of Mexico—*Kosteletzkya.* Contr. U.S. Natl. Herb. 23:776–777; Kearney, T. H. 1951. The American genera of Malvaceae—*Kosteletzkya.* Amer. Midl. Naturalist 46:109; Standley, P. C. and J. Steyermark. 1949. Flora of Guatemala—*Kosteletzkya.* Fieldiana, Bot. 24:354–355; Blanchard, O. J., Jr. 1974. Chromosome numbers in *Kosteletzkya* Presl (Malvaceae). Rhodora 76:64–66.

1. **Kosteletzkya depressa** (L.) O. Blanchard, Fryx. & D. Bates, Gentes Herb. 11:357. 1978.

—*Melochia depressa* L., Sp. Pl. 674. 1753. —Type: ex Jamaica, in cult. *van Royen* (L—909, 64115).

Hibiscus pentaspermus Bertero ex DC., Prodr. 1:447. 1824 (non Nutt., 1822). —*Kosteletzkya pentasperma* (Bertero ex DC.) Griseb., Fl. Brit. W. I. 83. 1859. ≡*Pavonia berteri* Sprengel, Syst. Veg. 3:99. 1826. —Type: Jamaica, *Bertero s.n.* (G—DC as microfiche!; isotypes: MO! W as photograph F—33384!).

Hibiscus tampicensis Moric. ex Ser., Bull. Bot. 6:174. 1830. —*Kosteletzkya tampicensis* (Moric. ex Ser.) Rose, Contr. U.S. Natl. Herb. 8:319. 1905. —Type: Mexico, Tampico, *Berlandier 210* (G; isotypes: BM! UC!).

Kosteletzkya sagittata K. Presl, Reliq. Haenk. 2:131, *t.70.* 1835. —Type: Mexico, *Haenke s.n.* (isotypes: BM! MO! W as photograph F—32656!).

Kosteletzkya hastata K. Presl, Reliq. Haenk. 2:130. 1835. —Type: Mexico, *Haenke s.n.* (PR; isotype: W as photograph F—32654!).

Kosteletzkya hispida K. Presl, Reliq. Haenk. 2:132. 1835. —Type: Mexico, *Haenke s.n.* (isotypes: BM! W as photograph F—32655!).

Kosteletzkya cordata K. Presl, Reliq. Haenk. 2:132. 1835. —Type: Mexico, *Haenke s.n.* (PR).

Kosteletzkya stellata Fern., Bot. Gaz. 20:532. 1895 (non Hutchinson & Dalziel, 1928). —Lectotype (Fryxell, Syst. Bot. Monogr. 25:247. 1988): Mexico, Sinaloa, Mazatlán, Jan 1889, *Wright 1241* (GH!; isolectotypes: DS! F!).

Kosteletzkya violacea Rose, Contr. U.S. Natl. Herb. 8:319. 1905. —Type: Morelos, Jojutla, 31 Aug 1902, *Pringle 8663* (US!; isotypes: CM! F! GH! GOET! K! LL! MICH! MO! NY! O! PH! POM! UC! VT! pf!).

Illustrations: **Fig. 15**; K. Presl, Reliq. Haenk. *pl. 70.* 1835; Moricand, Pl. Nouv. Amér. *t.14.* 1836; Martius Fl. Bras. 12(3):*pl. 111.* 1891; Fawcett and Rendle, Fl. Jamaica 5:144, *fig. 53.* 1926.

Herb or subshrub 1–2 m tall; stems green, hispid or scabrid with stellate or simple hairs, sometimes also with narrow lines of minute recurved or twisted hairs decurrent from the stipules. Leaves reduced upwards, lanceolate, hastate, cordate-ovate or somewhat lobed, dentate, stellate-pubescent above and beneath, often with large few-armed hairs intermingled with much smaller hairs. Flowers solitary or forming diffuse leafy panicles; pedicels minutely scabridulous; involucel of 7–9 linear bracts 2–3 mm long; calyx 3–5 mm long, > half-divided; corolla rotate, whitish or yellowish (sometimes fading pink), 8–10 mm long; staminal column glabrous, pallid; anthers few, yellowish; stigmas 5, capitate, pallid. Capsule depressed, 5-winged, transversely costate, stellate-pubescent and with prominent uncinate hairs on margins of wings (sutures of dehiscence), ca. 6 mm diameter (excluding wings); seeds reniform, glabrous, 2.5 mm long; Sep–Dec.

Usually in marshy ground in Herbaceous Marsh and Coastal Strand; locally common in Gulf Coastal Plain, Central Depression, and Pacific Coastal Plain; 0 to 900 m. Mex. (Son., Tam., Sin., S.L.P., Nay., Jal., Cma., Mich., Méx., Mlos., Pue., Ver., Gro., Oax., Tab., Chis.), Guat., Hond., Salv., Nic., Pan., Antill., S.A. (Ven., Ecu., Peru). Chiapas Collections: *F 3199* (CHAPA, DS, pf); *EM 2670* (MEXU); *EM 2712* (MO, UC); *EM 16915* (MEXU); *37827*; *52829*; *56080.*

19. LAVATERA

Lavatera L., Sp. Pl. 690. 1753; Gen. Pl. ed. 5. 308. 1754. —Lectotype (chosen by Hitchcock and Green, 1929): *Lavatera trimestris* L.

Saviniona Webb & Berth., Phyto. Canar. 1:30. 1836. —Type: *Saviniona acerifolia* (Cav.) Webb & Berth. (≡*Lavatera acerifolia* Cav.).

Shrubs 1–3 m tall, sometimes small trees, stellate-pubescent to glabrate. Leaves deeply cordate, palmately 5–7-lobed, the lobes acute or obtuse, serrate or crenate. Flowers solitary or paired in the axils of the leaves; involucel trimerous, more or less gamophyllous basally, the lobes ligulate; calyx 5-lobed, tubular in flower, more or less enclosing fruit; petals purple, lavender, or whitish with purple veins; androecium included; styles 6–10, exceeding androecium, slender, the stigmatic zone decurrent on the inner surface. Fruits schizocarpic, disk-shaped; mericarps 6–10, semi-circular wedges, laterally reticulate, dorsally smooth, more or less pubescent, essentially indehiscent; seeds solitary, glabrous.

Lavatera is an Old World genus of about 20 species of herbs and subshrubs, principally from the Mediterranean region, some species of which have been brought into garden cultivation. The genus also occurs disjunctly as a group of four shrubby or subarborescent species in the offshore islands of Baja California and southern California. The preceding description is drawn from the latter group of New World species.

References: Greene, E. L. 1890. Native shrubs of California IV. *Lavatera.* Gard. & Forest 3:378–379; 1912. The genus *Saviniona.* Leafl. Bot. Obs. Crit. 2:159–163; Moran, R. 1951. Notes on the flora of Guadalupe Islands, Mexico. Madroño 11: 157–159; Beauchamp, R. M. 1972. New localities for *Lavatera venosa* Wats. Madroño 21:404.

1. **Lavatera assurgentiflora** Kellogg, Proc. Calif. Acad. Sci. 1:14. 1854.

—*Althaea assurgentiflora* (Kellogg) Kuntze, Revis. Gen. Pl. 1:66. 1891. —*Saviniona assurgentiflora* (Kellogg) E. Greene, Leafl. Bot. Obs. Crit. 2:163. 1911. —Type: United States, California, from the island of Anacapa, off the coast of Santa Barbara (specimen unknown).

Illustrations: **Fig. 16**; Camargo, Cat. Ilus. Pl. Cundinamarca 4:164, *fig. 58.* 1969; Wiggins, Fl. Baja Calif. 731, *fig. 708.* 1980; Bot. Mag. *t.9450*; Fryxell, Syst. Bot. Monogr. 25: 259. *fig. 65.* 1988.

Shrubs to 3 m tall, minutely stellate-puberulent to glabrate. Leaves long-petiolate, palmately 5–7-lobed, crenate, the lobes acute to obtuse, slightly discolorous, minutely stellate-puberulent to glabrate. Pedicels solitary or paired in the axils of the leaves, 2–4 cm long, slender; involucel trimerous, more or less connate basally, the lobes triangular, shorter than the calyx; calyx stellate-puberulent, tubular in flower and about ⅓-lobed, accrescent in fruit and enclosing fruit; petals 3–4 cm long, rose or purplish or with purple veins (pallid basally); androecium shorter than petals, columnar, pallid; styles ca. 8, ultimately exceeding androecium, sometimes purplish, the stigmatic surface unilaterally decurrent. Fruits schizocarpic, disk-shaped, 12–16 mm diameter; mericarps ca. 8, dorsally smooth, laterally reticulate, apically pubescent; seeds solitary, glabrous, 4 mm long.

Native to the offshore islands of southern California, *Lavatera assurgentiflora* is now widely grown as an ornamental shrub in Mexico and elsewhere—definitely to be expected in Chiapas gardens. Chiapas Collections: none seen.

20. LOPIMIA

Lopimia Martius, Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 11:96. 1823. —Type: *Lopimia malacophylla* (Link & Otto) Martius.

Shrubs or small trees 1–8 m tall, stellate-pubescent. Leaves petiolate, the blades ovate (sometimes angularly so), acute or acuminate, more or less discolorous. Flowers generally aggregated in terminal racemes or paniculate inflorescences; involucel usually 10–18-parted, hirsute, valvate and enclosing bud; calyx much shorter than involucel; petals lavender to red, twice length of involucel or longer; androecium equaling corolla or exserted, apically 5-dentate; styles 10, slender, slightly exserted, the stigmas capitate. Fruits schizocarpic, blackish; mericarps 5, indehiscent, viscid, glabrous, 1-seeded.

Lopimia is a genus of two species from Central and South America.

References: Standley, P. C. 1916. Studies of tropical American phanerogams—no. 2. Contr. U.S. Natl. Herb. 18:87–142 [*Lopimia* on pp. 114–115]. Kearney, T. H. 1951. The American genera of Malvaceae. Amer. Midl. Naturalist 46:93–131.

1. **Lopimia malacophylla** (Link & Otto) Martius, Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 11:97 1823.

—*Sida malacophylla* Link & Otto, Icon. Pl. Select. 67. *t. 30.* 1822. —*Pavonia malacophylla* (Link & Otto) Garcke, Jahrb. Bot. Gart. Mus. Berlin 1:221. 1881. —*Malache malacophylla* (Link & Otto) Standley, Contr. U.S. Natl. Herb.

23:771. 1923. —Type: Berlin Bot. Gard. (specimen unknown).

Pavonia velutina Juss. in St.-Hil., Fl. Bras. Mer. 1:182. 1827. —Type: Brazil, Minas Geraes, prope Itangua, *St.-Hilaire s.n.* (holotype: P?).

Pavonia plumosa Turcz., Bull. Soc. Imp. Naturalistes Moscou 31:190. 1858. —Type: Brazil. Bahia, *Salzmann s.n.* (lectotype: KW!).

Pavonia megalophylla Wright in Griseb., Cat. Pl. Cub. 27. 1866. —Type: Cuba, *Wright 2062* (holotype: GOET!; isotype: K!).

Illustrations: Link & Otto (loc. cit.); Curtis, Bot. Mag. 74: *t.4365*. 1848; Lemaire, Fl. Serres 4:*t.350*. 1848; Fryxell, Syst. Bot. Monogr. 25:*frontispiece*. 1988.

Shrubs or small trees 1.5–5 m tall, the stems densely stellate-pubescent and with glandular hairs. Leaf blades mostly 9–21 cm long, ovate to weakly angulate, cordate, finely serrulate, acute, densely pubescent above and beneath, somewhat discolorous; petioles subequal to blades on lower leaves, shorter upward; stipules usually 4–7 mm long, subulate (sometimes lanceolate and up to 2 cm long). Flowers aggregated into dense terminal inflorescences; pedicels of varying lengths up to 3 cm long, densely pubescent; involucellar bracts 15 or more, 12–18 mm long, externally glandular-pubescent, internally long-hirsute; calyx 2–3 mm long, wholly concealed by involucel; petals ca. 3 cm long, rose or red, erect forming a tubular corolla; staminal column more or less exserted, the filaments 4–10 mm long; styles exserted. Fruits blackish, viscid, depressed; mericarps ca. twice the height of the column; Nov–Mar.

Understory in Lower Montane Rain Forest and adjacent savanna; uncommon in Gulf Coastal Plain; 100–250 m. Mex. (Gro., Ver., Oax., Tab., Chis.), Bel., Nic., Pan., Col., Ven (?), Braz., Bol. Chiapas Collections: *Cházaro 3316* (XAL, pf); *Mz 16455* (MEXU, pf); *Mz 18439* (MEXU, pf).

21. MALACHRA

Malachra L., Mant. Pl. 1:13. 1767; Syst. Nat. ed. 12. 458. 1767. —Lectotype (Gürke, 1892): *Malachra capitata* (L.) L.

Herbs or subshrubs, sometimes puberulent, more commonly hispid, often with urticating hairs. Leaves petiolate, suborbicular to broadly ovate, angular, palmately lobed, to digitately divided, truncate, serrate, acute to obtuse, usually pubescent. Flowers in condensed, bracteate, head-like racemes, the "heads" axillary or terminal; specialized bracts subtending the inflorescences broadly cordate-ovate, sessile, basally often with prominent nerves alternating with white intercostal tissue, distally green and foliaceous; involucel absent (except present in *M. radiata*); calyx small, 5-lobed; corolla white, yellow, or lavender, often inconspicuous. Fruit a schizocarp, glabrous; mericarps 5, smooth, 1-seeded; seeds glabrous; $x = 28$.

Malachra is a genus of perhaps 8–10 species of the Neotropics; its occurrence in the Old World is probably the result of relatively recent introduction.

References: Gürke, M. 1892. Beiträge zur Systematik der Malvaceen. I. Die Gattung *Malachra.* Bot. Jahrb. Syst. 16:330–385; Hochreutiner, B. P. G. 1917. Notulae in Malvaceas. Annuaire Conserv. Jard. Bot. Genève 20:107–172.

a. Corolla white (rarely lavender); calyx 4–5 mm long; leaves more or less palmately lobed, the lobes more or less linear, the sinuses relatively narrow; stems hispid, the hairs 2–4(–7) mm long .... 3. *M. fasciata*
aa. Corolla yellow; calyx 5–8 mm long; leaves unlobed or angulate, if lobed the lobes obovate, the sinuses broadly rounded; stem hairs up to 1.5 mm long.
  b. Outer bracts acuminate; "heads" essentially sessile or on peduncles shorter than the subtending petioles; stems hispid, the hairs 1(–2) mm long; leaves unlobed or somewhat angular .... 1. *M. alceifolia*
  bb. Outer bracts rounded to acute; "heads" usually manifestly pedunculate; stems stellate-pubescent, sometimes also hispid; leaves unlobed or palmately lobed, the lobes basally constricted, the sinuses broadly rounded .... 3. *M. capitata*

1. **Malachra alceifolia** Jacq., Collectanea 2:350. 1789.

—Type: *Jacquin s.n.* (W, photograph F—32649!, right-hand specimen).

Malachra rotundifolia Schrank, Pl. Rar. Hort. Monac. *t.56*. 1820. —*Malachra alceifolia* Jacq. var. *rotundifolia* (Schrank) Gürke, Bot. Jahrb. Syst. 16:351. 1892; Martius, Fl. Bras. 12(3):462. 1892. —Type: in hort., *Schrank s.n.* (M).

Malachra conglomerata Turcz., Bull. Soc. Imp. Naturalistes Moscou 31:205. 1858. —*Malachra alceifolia* Jacq. var. *conglomerata* (Turcz.) Hochr., Annuaire Conserv. Jard. Bot. Genève 20:149. 1917. —Type: in prov. Ocaña, Novae Granadae, Oct 1850, *Schlim 176* (KW!; isotypes: BR! K!).

Illustrations: **Fig. 17**; Jacquin (loc. cit.); Schrank (loc. cit.); Fryxell, Syst. Bot. Monogr. 25:264. *fig. 66*; 266. *fig. 67*. 1988.

Herbs or subshrubs 0.5–2 m tall, the stems usually hispid, sometimes very sparsely so. Leaves petiolate, orbicular to ovate, 3–5-angled or slightly lobulate, truncate, serrate, acute or obtuse, sparsely hispid to glabrate. Inflorescence a series of compact axillary few-flowered glomerules, short-pedunculate to sessile, with several specialized nearly sessile floral bracts; bracts cordate, acuminate, often with white reticulate tissue at base, often hispid; calyx deeply 5-lobed, 6–8 mm long, hispid; petals yellow, 1–1.5 cm long; staminal column about equaling corolla. Fruits schizocarpic; mericarps 5, brownish with reticulate veins, minutely puberulent, ca. 3 mm long; seeds solitary, glabrous; $2n = 56$.

Roadsides, abandoned fields, and other disturbed sites, often in wet soil; uncommon in Gulf Coastal Plain, Northern Highlands, Central Depression, and Pacific Coastal Plain; 0 to 600 m. Mex. (Tam., Sin., Nay., Jal., Cma., Mich., Ver., Gro., Oax., Tab., Yuc., Chis.), Bel., Guat., Hond., Nic., C.R., Pan., Antill., S.A. (Col., Ven., Guy., Ecu., Peru). Chiapas Collections: *F 880* (BH, pf); *EM 2691* (F); *20000* [mixed with *M. fasciata*]; *54376*.

2. **Malachra capitata** (L.) L., Syst. Nat. ed. 12. 458. 1767.

—*Sida capitata* L., Sp. Pl. 685. 1753. —Type: "capitata 10" ex Hort. Ups. (LINN—867.1, as microfiche!; isotype: S, as microfiche!).

Malachra palmata Moench, Methodus 615. 1794. Based on: Cavanilles, Diss. 1:*t.23.f.2.*

Malachra mexicana Schrader, Index Sem. Hort. Gött. p. 3. 1830. —Type: unknown.

Illustration: Fawcett and Rendle, Fl. Jamaica 5:123, *fig. 48.* 1926; Fryxell, Syst. Bot. Monogr. 25:264. *fig. 66.* 1988; Fl. Lesser Antilles 5:219. *fig. 91.* 1989.

Herb or subshrub to 1.5 m tall, the stems densely stellate-pubescent, sometimes also with longer simple hairs, especially on young growth. Leaves petiolate, ovate, lyrate, to 3–5-lobed, the lobes constricted basally, the sinuses broadly rounded, truncate to subcordate, crenate-serrate, acute or obtuse, sparsely to moderately stellate-pubescent. Inflorescence a capitulum terminating an axillary peduncle that usually exceeds the subtending petiole, with 2 or more specialized floral bracts; bracts deeply cordate, sessile, entire, rounded to acute, with prominent white markings at base, often hispid; calyx deeply 5-lobed, 6–8 mm long, hispid; petals yellow, 7–10 mm long. Fruits schizocarpic; mericarps 5, brownish with reticulate veins, glabrous, ca. 3 mm long; seeds solitary, glabrous; $2n = 56$.

Roadsides, pastures and margins of Lowland Riparian Forest, often in wet soil; common in Gulf Coastal Plain, Northern Highlands, and Eastern Highlands; 80 to 200 (–1000) m. U.S., Mex. (Tam., S.L.P., Jal., Cma., Pue., Ver., Tab., Camp., Yuc., Q.Roo, Chis.), Bel., Guat., Hond., Nic. Chiapas Collections: *Co 3384* (CSAT, DS, pf); *Mz 10533* (MEXU, pf); *28740*.

3. **Malachra fasciata** Jacq., Collectanea 2:352. 1789.

—*Malachra alceifolia* Jacq. var. *fasciata* (Jacq.) Robyns, Ann. Missouri Bot. Gard. 52:527. 1966. —Type: ex herb. Jacquin (W, as photograph F—32649! left-hand specimen).

Malachra humilis Benth., Pl. Hartw. 113. 1843. —Type: Ecuador, prope Guayaquil, *Hartweg 633* (K!; isotype: OXF!).

Malachra kegeliana Garcke, Linnaea 22:52. 1849. —Type: Surinam, prope Paramaribo, Aug 1857, *Kegel 867* (isotypes: GOET—3!).

Malachra lineariloba Turcz., Bull. Soc. Imp. Naturalistes Moscou 31:206. 1858. *Malachra fasciata* Jacq. var. *lineariloba* (Turcz.) Gürke, Bot. Jahrb. Syst. 16:355. 1892. —Type: Ins. Philipp., *Cuming 1111* (isotypes: BM! G, K! L, P, pf!).

Illustrations: Jacquin, Icon. *t.548.* 1792; Martius Flor. Bras. 12(3):*pl. 81.* 1892; Fryxell, Syst. Bot. Monogr. 25:264. *fig. 66.* 1988.

Herb or subshrub 0.5–1(–2) m tall, the stems hispid with pungent hairs 2–4(–7) mm long. Leaves petiolate, ovate, usually lobed or deeply parted, the lobes not constricted basally (the lobes ovate if shallowly lobed, more or less linear-lanceolate if deeply parted, the sinuses more or less acute), truncate, crenate-serrate, acute, sparsely hispid, the hairs often appressed. Inflorescences short-pedunculate axillary few-flowered heads, with two or more specialized floral bracts; bracts lance-ovate (longer than wide), acute, prominently costate basally with at least some whitish intercostal tissue, prominently hispid; calyx deeply 5-lobed, 4–5 mm long, with whitish intercostal areas; petals white, 6–8 mm long. Fruits schizocarpic; mericarps 5, ca. 3 mm long, brownish with reticulate veins, minutely puberulent to glabrous; seeds solitary, glabrous; $2n$ = ca. 112.

Often weedy, in wet areas on roadsides in Lower Montane Rain Forest, Lowland Riparian Forest, and Mangrove Swamp; uncommon in Gulf Coastal Plain, Northern Highlands, Eastern Highlands, and Pacific Coastal Plain; 0 to 500 m. Mex. (Jal., Cma., Mich., Méx., Ver., Gro., Oax., Tab., Camp., Yuc., Chis.), Guat., Bel., Salv., Hond., Nic., C.R., Pan., Antill., S.A. (Col., Ven., Ecu., Peru, Bol., Braz.). Chiapas Collections: *Mz 8826* (MEXU, pf); *EM 16953* (F); *EM 18428* (DS, F); *20782*; *26473*; *52838*.

22. MALVA

Malva L., Sp. Pl. 687. 1753; Gen. Pl. ed. 5. 308. 1754. —Lectotype (chosen by Britton and Brown, 1913): *Malva sylvestris* L.

Herbaceous plants, trailing, ascending, or erect, glabrous or pubescent. Leaves long-petiolate, orbicular or reniform in outline, more or less palmately 5–7-lobed, rarely deeply dissected. Flowers axillary, solitary or fasciculate, sometimes grouped in terminal inflorescences; involucellar bracts 2–3, distinct, subulate or foliar; calyx gamosepalous, 5-lobed, often accrescent and spreading in fruit; petals usually purple, sometimes white, emarginate or with a prominent notch apically; androecium included; styles filiform, the stigmatic surface laterally decurrent. Fruits schizocarpic, oblate; mericarps numerous, indehiscent, dorsally more or less reticulate, 1-seeded; $x = 21$.

Malva is an Old World genus of ca. 40 species from Europe, Africa, and the Middle East; a few species have been introduced into the New World and become naturalized, some as weeds, some as garden ornamentals.

References: Morton, C. V. 1937. The correct names of the small-flowered mallows. Rhodora 39:98–99; Dalby, D. H. 1968. *Malva. In:* Flora Europaea 2:249–251.

a. Bractlets of involucel linear or filiform; petals 4–5 mm long, scarcely exceeding the calyx .... 2. *M. parviflora*
aa. Bractlets of involucel broadly lanceolate to ovate; petals manifest, usually 10 mm long or more.

b. Bractlets of the involucel 1–2.5 mm wide; petals 8–15 mm long, pink to lavender; plants decumbent, often weedy . . . . 1. *M. nicaeensis*

bb. Bractlets of the involucel 3–5 mm wide; petals 16–25 mm long, purplish, showy; plants erect, grown for ornament, sometimes naturalized . . . . 3. *M. sylvestris*

1. **Malva nicaeensis** All., Fl. Pedem. 2:40. 1785.

—Type: France, cultivated field near Nice "prope portum de Limpia," *Bellardi s.n.* (TO).

Illustration: Herter, Fl. Ilus. Uruguay, fasc. 13, *fig. 2131.* 1957.

Herbs, trailing to ascending, the stems more or less hispid. Leaves orbicular or reniform, slightly lobulate, crenate, appressed-pubescent. Flowers 1–4 in the axils, the pedicels subequal to the calyces; bractlets of the involucel lanceolate, 1–2.5 mm wide; calyx 4–6 mm long in flower to 6–12 mm long in fruit; petals 5–15 mm long, pink to lavender. Mericarps prominently rugose but not winged, often hirsute; $2n = 42$.

Commonly weedy in urban situations, roadsides, and cultivated fields; common in the Central Plateau; 1500 m. Mex. (Mich., Méx., D.F., Mlos., Pue., Oax., Chis.), Guat., Salv., Hond. [native to the Mediterranean region and Asia Minor, introduced in the New World]. Chiapas Collections: *Ch 2859* (CAS, MEXU); *F 3307* (pf); *La 73* (DS); *La 573* (DS); *La 2210* (DS); *6755*; *9119*; *11265*; *33736*; *48477*.

2. **Malva parviflora** L., Demonstr. Pl. 18. 1753 [Amoen. Acad. 3:416. 1756].

—Type: from Barbary, "parviflora 16" (LINN—870.17, as microfiche!).

Illustrations: **Fig. 18**; Martius Flor. Bras. 12(3):*pl. 51.* 1892; Herter, Fl. Ilus. Uruguay, fasc. 13, *fig. 2128.* 1957; Camargo, Cat. Ilus. Pl. Cundinamarca 4:166, *fig. 59.* 1969; Steyermark, Fl. Missouri *pl. 251.* [no date]; Wiggins, Fl. Baja Calif. 732, *fig. 710.* 1980; Fryxell, Syst. Bot. Monogr. 25:279. *fig. 70.* 1988.

Herbs, trailing or ascending, slightly pubescent or glabrate. Leaves orbicular or reniform, crenate, undulate, or palmately lobed. Flowers 1–4 in the axils, the pedicels shorter than the calyces; bractlets of the involucel filiform; calyx 3–4 mm long in flower to 7–8 mm long in fruit; petals 4–5 mm long, lavender or white. Mericarps rugose or wrinkled dorsally and winged at the angle between the dorsal and lateral walls, giving the fruit a ribbed appearance; $2n = 42$.

Commonly weedy in urban situations, roadsides, and cultivated fields; common in the Northern Highlands, Central Plateau, Central Depression, and Sierra Madre; 0 to 2800 m. U.S., Mex. (Baja C., Baja C.S., Son., Chih., Coah., N.L., Tam., Sin., Dgo., S.L.P., Jal., Gto., Qro., Hgo., Cma., Mich., Méx., D.F., Mlos., Pue., Ver., Gro., Oax., Chis.), Guat., Salv., Hond., S.A. (Ecu., Peru, Bol., Braz.), Eur., Afr., Asia [native from Europe to India, introduced in the New World]. Chiapas Collections: *F 3308* (CHAPA, MEXU, pf); *La 1018* (DS); *La 1726* (DS); *EM 2836* (F); *11268*; *12313*; *33833*; *48725*; *50106*.

3. **Malva sylvestris** L., Sp. Pl. 685. 1753.

—Type: Europe, "9 sylvestris" (LINN—870.22, as microfiche!).

Illustrations: Herter, Fl. Ilus. Uruguay, fasc. 13, *fig. 2130.* 1957; New Britton and Brown Illus. Flor. 2:526. 1968; Steyermark, Fl. Missouri *pl. 250.* [no date]; Krapovickas in Cabrera, Fl. Prov. Buenos Aires 4:182. *fig. 54.* 1965; Molinari, Publ. Inst. Bot. Agric. [Buenos Aires] 7 (fasc. 124):37, *fig. 12.* 1965; Heywood, Fl. Pl. World 94. 1978.

Herbs or subshrubs, usually erect, sparsely pubescent. Leaves reniform, more or less palmately lobed, crenate, highly variable in size. Flowers 1–4 in the axils on slender pedicels 1–2(–4) cm long; bracts of the involucel oblong or elliptic, 1.2–5 mm wide; calyx 6–10 mm long, little if at all accrescent; petals 16–25 mm long, with a prominent apical notch, purple with dark veins, hirsute on the claw; androecium purple, the column pubescent; styles slender, purple. Mericarps dorsally reticulate or rugose; $2n = 42$.

An introduced garden ornamental, often escaped and naturalized, in urban and disturbed habitats; rare in Central Plateau; 1800 to 2000 m. Chiapas Collections: *6992A*; *16089*; *69959*.

23. MALVASTRUM

Malvastrum A. Gray, Mem. Amer. Acad. Arts n.s. 4:21. 1849, nom. conserv. Lectotype: *Malvastrum wrightii* A. Gray.

Perennial shrubs or subshrubs (sometimes annual), erect, with patent or appressed stellate pubescence. Leaves ovate or lanceolate, usually simple, crenate or dentate. Flowers axillary and solitary or aggregated in apical spikes or racemes; involucel of 3 filiform or spatulate bractlets; calyx 5-lobed; corolla yellow or orangish, rarely with a red center; androecium included; stigmas capitate. Fruits oblate, setose or pubescent; mericarps 7–18, indehiscent, horseshoe-shaped with a prominent ventral notch, sometimes 2–3-cuspidate, 1-seeded; seeds glabrous; $x = 6$.

Malvastrum is a genus of 14 species, principally American, including four species that occur in Mexico; two species are adventives in various parts of the Old World as well.

References: Hill, S. R. 1982. A monograph of the genus *Malvastrum* A. Gray (Malvaceae: Malveae). Rhodora 84:1–83, 159–264, 317–409.

a. Hairs of upper leaf surface usually simple; flowers all axillary, scattered along the branches, manifestly pedicellate, the pedicels 2–10 mm long; stem pubescence of appressed stellate hairs with 4 radii, 2 antrorse and 2 retrorse; mericarps with 3 prominent cusps; staminal column glabrous .... 3. *M. coromandelianum*
aa. Hairs of upper leaf surface stellate; flowers sometimes solitary but usually in terminal spicate inflorescences, sessile or subsessile; stem pubescence of stellate hairs with 3–12 more or less spreading radii; mericarps with rounded dorsal wall lacking cusps (or these obscure); staminal column pubescent.
  b. Stem hairs mostly 3–5-rayed, appressed; inflorescence a spike usually no more than 2 cm long, the pedicels ca. 1 mm long; lateral walls of mericarps more or less pubescent .... 2. *M. corchorifolium*
  bb. Stem hairs mostly 5–12-rayed, tufted; inflorescence a dense spike usually more than 3 cm long, the flowers sessile; lateral walls of mericarp nearly glabrous .... 1. *M. americanum*

1. **Malvastrum americanum** (L.) Torrey, Rep. U.S. Mex. Bound. Surv., Bot. 38. 1859.

—*Malva americana* L., Sp. Pl. 687. 1753. —Lectotype (Borssum Waalkes, Blumea 14:154. 1966): Hortus Leydenensis, *van Royen s.n.* (L).

Illustrations: **Fig. 19**; Robyns, Ann. Missouri Bot. Gard. 52:547, *fig. 9.* 1965; Hill, Rhodora 84:188, *fig. 26.* 1982; Fryxell, Syst. Bot. Monogr. 25:282. *fig. 71.* 1988.

Herbs, subshrubs, or shrubs, 0.5–1.5 m tall, stellate-pubescent. Leaves petiolate, ovate or weakly lobulate, truncate, serrate, acute, minutely stellate-pubescent above and beneath. Flowers subsessile and crowded in dense spicate inflorescences, the spikes terminal or terminating lateral axillary branches, the individual flowers bracteate and subtended by involucel of 3 linear bractlets; calyx 5–6 mm long, accrescent to 6–10 mm in fruit, hirsute; petals yellow-orange, 8–9 mm long; androecium yellowish, included, the column stellate-pubescent. Fruits oblate, 5–6 mm diameter; mericarps 11–14, horseshoe-shaped, apically setose, dorsally smooth and glabrous, laterally ribbed, without cusps, 1-seeded; seeds 1.5 mm long, glabrous; $2n = 24$.

In fence rows, cultivated fields, urban habitats, and in Tropical Deciduous Forest; uncommon in Central Depression [to be expected also on the Gulf Coastal Plain and the Pacific Coastal Plain]; 500 to 900 m. U.S., Mex. (N.L., Tam., Sin., S.L.P., Jal., Hgo., Cma., Méx., Mlos., Pue., Ver., Gro., Oax., Tab., Chis.), Guat., Salv., Hond., Nic., C.R., Pan., Antill., S.A. (Col., Ven., Ecu., Peru, Bol., Braz., Arg., Parag.), Asia, Australia. Chiapas Collections: *13593*; *19992*; *52822*.

2. **Malvastrum corchorifolium** (Desr. in Lam.) Britton ex Small, Fl. Miami 119. 1913.

—*Malva corchorifolia* Desr. in Lam., Encycl. 3:755. 1792. ≡*Malva scoparia* Jacq., Collectanea 1:59. 1787; Icon. Pl. Rar. 1:14, *t.139.* 1787 (non L'Hér., 1786). —Lectotype (Hill, Rhodora 84:348. 1982): Jacquin's *plate 139,* reproduced by Hill (1982:352).

Malvastrum rugelii S. Watson, Proc. Amer. Acad. Arts 17: 367. 1882. —Type: United States, Florida, Manatee County, mouth of the Manatee River, Jun 1845, *Rugel 90* (GH!; isotypes: BM! UC! US! pf!).

Illustrations: Hill, Rhodora 84:350, *fig. 70*; 352, *fig. 71.* 1982; Fl. Lesser Antilles 5:219. *fig. 92.* 1989.

Subshrubs, the stems with appressed 3–5-rayed hairs. Leaves ovate, dentate, the upper surface with 4–5-rayed stellate hairs. Flowers solitary in the axils of the upper leaves, subsessile, becoming congested and spicate on branch tips, the individual flowers bracteate and subtended by an involucel of 3 lanceolate bractlets; calyx 5–6 mm long, accrescent to 7–11 mm in fruit, moderately pubescent; corolla yellow, exceeding the calyx; androecium included, yellowish, the column stellate-pubescent. Fruit oblate, 5–6.5 mm diameter; mericarps 11–13, horseshoe-shaped, apically setose, laterally pubescent, with cusps greatly suppressed, 1-seeded; seeds glabrous; $2n = 48$; principally Oct–Feb (but sporadically at other seasons).

On roadsides, in urban habitats, and in secondary vegetation, generally confined to calcareous sites, in Tropical Deciduous Forest and Seasonal Evergreen Forest; common in the Northern Highlands, Central Plateau, Central Depression, and the Sierra Madre; 500 to 2200 m [elsewhere down to sea level]. U.S., Mex. (Tab., Camp. Yuc., Q.Roo, Chis.), Guat., Salv., Hond., Nic., Antill. Chiapas Collections: *F 3306* (CHAPA, MEXU, pf); *10655* (LL—mixed with *M. coromandelianum*); *14065*; *37388*; *39623*; *39925*; *46008*; *47108*; *48724*; *52388*; *55464*.

3. **Malvastrum coromandelianum** (L.) Garcke, Bonplandia 5:295. 1857.

—*Malva coromandeliana* L., Sp. Pl. 687. 1753. ≡*Malva tricuspidata* R. Br. ex Aiton, Hort. Kew. ed. 2. 4:210. 1812. —*Malvastrum tricuspidatum* (R. Br. ex Aiton) A. Gray, Smithsonian Contr. Knowl. 3(art. 5, Pl. Wright. 1):16. 1852. —Lectotype (Borssum Waalkes, Blumea 14:152. 1966): "2 coromandeliana HU" (LINN—870.3, as microfiche!; isolectotype: S, as microfiche!).

Malva lindheimeriana Scheele, Linnaea 21:470. 1848. —*Malvastrum lindheimerianum* (Scheele) Walp., Ann. Bot. Syst. 2:153. 1851. —Lectotype (chosen by Hill, 1982): United States, Texas, near New Braunfels, Aug 1846, *Lindheimer 241* (GOET!; isotypes: GH! K! MO! PH! US!). Note: The type was distributed by Asa Gray under the number 351.

Illustrations: Martius, Fl. Bras. 12(3):*pl. 53.* 1892; Fawcett and Rendle, Fl. Jamaica 5:105, *fig. 44.* 1926; Krapovickas in Cabrera, Fl. Prov. Buenos Aires 4:211, *fig. 61.* 1965; Fl. Taiwan 3:720, pl. 785. 1977; Wiggins, Fl. Baja Calif. 734, *fig. 711.* 1980; Krapovickas in Steyermark and Huber, Fl. Avila *pl. 197.* 1978; Hill, 1982:325 (fig. 63), 326 (fig. 64).

Subshrub (or sometimes an annual herb), the stems with appressed 4-rayed hairs, the radii oriented 2-by-2 with the stem axis. Leaves ovate or lanceolate, dentate, the upper surface with simple hairs. Flowers axillary, usually solitary on short pedicels (approximately equaling calyx); bractlets of the involucel 3, linear or narrowly spatulate, shorter than the calyx; calyx 5–7 mm long, accrescent to 8–11 mm in fruit, hirsute; corolla yellow, exceeding the calyx; androecium included, yellowish, the column glabrous. Fruits oblate, 6–7 mm diameter;

mericarps 10–12, setose, 3-cusped (one apical, two on the dorsal wall), 1-seeded; seeds glabrous; $2n = 24$.

Often weedy, commonly on disturbed ground (including urban areas), also along streams in Tropical Deciduous Forest; uncommon in Eastern Highlands, Central Depression, and Sierra Madre; 150 to 900 m. U.S., Mex. (Baja C.S., Son., Coah., N.L., Tam., Sin., Dgo., Zac., S.L.P., Nay., Jal., Gto., Qro., Hgo., Cma., Mich., Méx., Mlos. Pue., Ver., Gro., Oax., Camp., Chis.), Guat., Bel., Salv., Hond., Nic., C.R., Pan., Antill., S.A. (Col., Ven., Guy., Ecu., Peru, Bol., Chile, Braz., Arg., Parag.), Afr., Asia, Pac. Basin, Australia. CHIAPAS COLLECTIONS: *Cz 3438* (XAL, pf); *Co 3296* (CSAT, pf); *Mi 5507* (MEXU); *10655* (F, LL—mixed with *M. corchorifolium*); *19985*; *20019*; *25237*; *70840*.

24. MALVAVISCUS

Malvaviscus Fabr., Enum. 155. 1759. —TYPE: *Hibiscus malvaviscus* L. (≡*Malvaviscus arboreus* Cav.).
Achania Swartz, Prodr. 102. 1788. —TYPE: *Achania pilosa* Swartz.

Branching shrubs, sometimes scandent, rarely small trees, pubescent or glabrous. Leaves petiolate, elliptic, ovate, or 3–5-lobed, truncate or cordate. Flowers solitary in the axils or sometimes in apical cyme-like groups; bractlets of the involucel linear, lanceolate, or spatulate, usually 8–9; calyx gamosepalous, campanulate or tubular, 5-lobed; petals red (rarely white), auriculate at the base, forming a tubular corolla; androecium greatly exserted, the staminal column with 5 apical teeth; styles 10 with capitate stigmas. Fruit a fleshy schizocarp or berry, usually red, with 5 carpels, each 1-seeded; $x = 14$.

A few to a dozen species depending on interpretation; a difficult genus, in need of a modern revision, that occurs from Texas to South America, with its greatest diversity in Mexico and Central America. Some forms are widely cultivated for their showy flowers.

REFERENCES: STANDLEY, P. C. 1923. Trees and shrubs of Mexico—*Malvaviscus*. Contr. U.S. Natl. Herb. 23(3):773–775; SCHERY, R. W. 1942. Mongraph of *Malvaviscus*. Ann. Missouri Bot. Gard. 29:183–244.

a. Calyx 16–20 mm long; leaves lance-ovate, basally truncate, unlobed.
  b. Calyx yellowish, densely and coarsely pubescent throughout, the hairs 1–2 mm long; androecium manifestly exserted; leaves large, often 10–25 cm long; petioles and stems densely and uniformly pubescent, the hairs 1–2 mm long; fruits 1–1.5 cm diameter .... 1. *M. achanioides*
  bb. Calyx green, glabrate on tube and with a few cilia (1 mm) on tips of lobes; androecium subequal to petals; leaves usually less than 10(–17) cm long; petioles pubescent only ventrally and the stems sparsely in lines decurrent from the stipules, the hairs recurved; plants sterile, flowering freely but producing no fruits .... 4. *M. penduliflorus*
aa. Calyx 7–15 mm long; leaves various.
  c. Corolla white; leaf blades lanceolate, basally truncate, 2–3 times as long as wide, calyx 12–15 mm long, marginally ciliate (hairs 1.5–2 mm), otherwise sparsely pubescent; stems, petioles, and pedicels densely pubescent, the hairs whitish, somewhat curly, 1–2 mm long .... 5. *M. urticifolius*
  cc. Corolla red; leaf blades lanceolate to broadly ovate, truncate or cordate, lobed or unlobed; calyx 7–15 mm long, variously pubescent or glabrate; stems variously pubescent or glabrate.
    d. Calyx 12–15 mm long, glabrate; plant more or less glabrate, often arborescent; involucellar bracts subequal to calyx, <1 mm wide, spreading; fruits 10–12 mm diameter, prominently 5-lobed .... 3. *M. lanceolatus*
    dd. Calyx 7–15 mm long, variously pubescent; plants pubescent to glabrate, usually shrubby; involucellar bracts >1 mm wide, erect; fruits 8–12 mm diameter, obscurely lobed.
      e. Branchlets, petioles, and under leaf-surface densely and uniformly stellate-tomentose, the surface usually obscured by the tomentum .... 2a. *M. arboreus* var. *arboreus*
      ee. Branchlets, petioles, and under leaf-surface stellate-pubescent to glabrate, the surfaces generally visible .... 2b. *M. arboreus* var. *mexicanus*

1. **Malvaviscus achanioides** (Turcz.) Fryx., Syst. Bot. 4:253. 1979.

—*Abelmoschus achanioides* Turcz., Bull. Soc. Imp. Naturalistes Moscou 31:196. 1858. —*Hibiscus achanioides* (Turcz.) Hemsley, Biol. Centr.-Amer. Bot. 1:121. 1879. —TYPE: Mexico, in statu Tabasco, in sylvis Teapae, alt. 2000 pedum, *Linden 838* [938] (isotypes: G, as photograph F—23734! K, LE). Note: Turczaninow cited Linden 838 as type but this was evidently a typographical error for no. 938.

Malvaviscus cutteri Standley, Publ. Field Mus. Nat. Hist., Bot. Ser. 4:315. 1929. —TYPE: Honduras, Dept. Atlantida, Lancetilla Valley near Tela, Dec 1927–Mar 1928, *Standley 54127* (F!, isotype: US!).

ILLUSTRATION: Publ. Field Mus. Nat. Hist., Bot. Ser. 10:*pl. 47*. 1931.

Shrub 3–4 m tall, sometimes scandent, the stems and petioles densely pubescent, the hairs 1–2 mm long. Leaves petiolate, ovate or lanceolate, truncate, crenate-serrate to subentire, acuminate or acute, stellate-pubescent (especially on veins) above and beneath, sparsely so above. Flowers axillary but usually clustered, 2 or more at the tips of the branches; pedicels 0.5–1.5 cm long; involucel of 8–9 bractlets, ca. 1 cm long, the bractlets linear, hirsute, nearly distinct; calyx 16–19 mm long, tubular, ca. ⅓-divided, markedly and evenly hirsute, yellowish becoming whitish with green veins; petals red or pink, 4 cm long, forming a tubular corolla; staminal column 5.5–6 cm long, glabrous, pallid, antheriferous in distal 6–7 mm, the filaments 1 mm long, the anthers ca. 25, purplish; stigmas dark red, slightly exceeding staminal column. Fruits oblate (twice as broad as high), enclosed in calyx; Sep–Jan.

Understory shrub in Lower Montane Rain Forest; common in Northern Highlands; 300 to 1900 m. Mex. (Ver., Tab., Chis.), Hond. Chiapas Collections: *F 888* (BH, DS, pf); *T 3305* (DS, pf); *20748*; *27478*; *28913*; *29721*; *30870*; *38166*; *56796*.

2a. **Malvaviscus arboreus** Cav., Diss. 3:131, *t.48.f.1.* 1787 var. **arboreus.**

≡*Hibiscus malvaviscus* L., Sp. Pl. 694. 1753. —*Achania malvaviscus* (L.) Swartz, 102. 1788. ≡*Achania coccinea* Salisbury, Prodr. Stirp. Chap. Allerton 385. 1796. —Type: "Hibiscus malvaviscus" (LINN—875.22, as microfiche!).

Malvaviscus acapulcensis Kunth in H.B.K., Nov. Gen. Sp. 5:288 [folio ed. p. 224]. 1822. —Type: Mexico, near Acapulco, *Humboldt and Bonpland s.n.* (P—HBK as microfiche!).

Illustrations: Gray, Gen. Amer. Bor. *pl. 131.* 1849; Bailey, Stand. Cycl. Hort. 2:1975, *fig. 2312.* 1939; Bot. Mag. 49: *pl. 2374.* 1822; Loddiges Bot. Cab. 12:*pl. 1155.* 1826.

Shrubs 1.5–2.5 m tall, densely pubescent. Leaves petiolate, elliptic, ovate, more or less lobed, truncate or cordate, crenate, acute or acuminate, densely and softly tomentose especially beneath. Flowers solitary in the axils or grouped apically; pedicels 1–3 cm long; bracts of the involucel 8–9, lanceolate, subequal to the calyx or a little shorter; calyx 10–15 mm long, tubular, 5-lobed, yellowish; petals 3–3.5 cm long; androecium 4–6 cm long, glabrous; anthers few (10–25), purplish; filaments 1–2 mm long, retrorse; styles and stigmas slightly exserted from staminal column. Fruits fleshy, red, 1 cm diameter; mericarps 5, 6 mm high, 1-seeded.

Understory shrub in Pine-Oak Forest and Tropical Deciduous Forest and a prominent element of Second-Growth Shrub Associations, sometimes cultivated; common in Central Plateau, Central Depression, and Sierra Madre; 600 to 2700 m. Mex. (Tam., Sin., S.L.P., Nay., Jal., Qro., Hgo., Méx., D.F., Tlax., Pue., Ver., Gro., Oax., Tab., Camp., Yuc., Q.Roo, Chis.), Guat., Salv., Hond., Nic., Pan., S.A. (Col., Ven.). Chiapas Collections: *MC 2042a* (F); *Da 9501* (MO, pf); *F 2585* (ASU, CHAPA, CTES, DS, OS, pf); *F 3295* (US); *Go 864* (US); *Go 904* (US); *Go 940* (US); *Go 983* (US); *Jt 53-673* (TEX); *RMK 2835* (DS, TEX); *RMK 3053* (TEX); *La 463* (DS); *La 876* (DS); *La 940* (DS, LL); *La 1576* (DS); *La 1914* (DS); *La 2008* (DS); EM 4724 (LL); *N 3005* (US); *N 3454* (US); *T 82* (DS); *T 2696* (DS, LL); *We 17965* (DS); *6592*; *7940*; *10028*; *10225*; *10389*; *10443*; *10506*; *10546*; *10654*; *11170*; *11768*; *12115*; *12408*; *14505*; *20116*; *20330*; *22891*; *24667*; *25672*; *26190*; *26829*; *28007*; *30468*; *37311*; *37481*; *37717*; *39089*; *40486*; *41284*; *41857*; *46516*; *51430*; *53675*.

2b. **Malvaviscus arboreus** Cav. var. **mexicanus** Schldl., Linnaea 11:359. 1837.

—Lectotype (Fryxell, Syst. Bot. Monogr. 25:292. 1988): Mexico, pr. Veracruz. *Schiede s.n.* (HAL).

Malvaviscus grandiflorus Kunth in H.B.K., Nov. Gen. Sp. 5: 286 [folio ed. p. 223]. 1822. —Type: Mexico, prope Guanajuato, *Humboldt and Bonpland s.n.* (P—HBK as microfiche!).

Malvaviscus pentacarpus DC., Prodr. 1:445. 1824. —Type: Icones Florae Mexicanae 124! (Torner Collection acc. no. 6331.1093, Hunt Institute).

Malvaviscus sepium Schldl., Linnaea 11:361. 1837. —*Malvaviscus arboreus* Cav. var. *sepium* (Schldl.) Schery, Ann. Missouri Bot. Gard. 29:226. 1942. —Type: Veracruz, in sepibus prope Jalapam, Jun 1829, *Schiede 480* (B—destroyed, as photograph F—9428! GOET! HAL).

Malvaviscus rivularis Brandegee, Zoe 5:211. 1905. —Type: Mexico, Sinaloa, Culiacán, banks of the Cofradia River, 20 Oct 1904, *Brandegee s.n.* (UC!; isotype: US!).

Plus numerous other synonyms; only those based on Mexican plants are cited above.

Illustrations: **Fig. 21**; Robyns, Ann. Missouri Bot. Gard. 52: 521, *fig. 4A–4E.* 1965; Curt. Bot. Mag. 49:*t.2305.* 1822; Fryxell, Syst. Bot. Monogr. 25:310. *fig. 78.* 1988.

Low widely branching shrubs, or sometimes scandent to 3 m or more, the stems and petioles moderately pubescent to glabrate, the kind and amount of pubescence highly variable. Leaves petiolate, elliptic to ovate, rarely weakly lobed, truncate or subcordate, serrate or crenate, acute or acuminate, moderately tomentose to glabrate. Flowers solitary in the axils or grouped apically; pedicels 0.5–2.5 cm long; bracts of the involucel 8–9, lanceolate, equaling or shorter than the calyx; calyx 7–15 mm long, tubular, 5-lobed, variously pubescent; petals 2–5 cm long; androecium 3–6 cm long, glabrous; anthers few (ca. 25), purplish; filaments 1–3 mm long, retrorse; styles and stigmas slightly exserted from staminal column, purplish. Fruits fleshy, red, 1–1.3 cm diameter; mericarps 5, 8–9 mm high, 1-seeded; $2n = 56$.

Understory shrub, on riverbanks and roadsides, in Lower Montane Rain Forest, Montane Rain Forest, Evergreen Cloud Forest, Evergreen Seasonal Forest, Tropical Deciduous Forest, Pine-Oak-Liquidambar Forest, and in Second-Growth Forest; common in Gulf Coastal Plain, Northern Highlands, Eastern Highlands, Central Plateau, Central Depression, Sierra Madre, and Pacific Coastal Plain; 0 to 2700 m. Mex. (Tam., Sin., Dgo., S.L.P., Nay., Jal., Aguasc., Gto., Hgo., Cma., Mich., Méx., D.F., Mlos., Pue., Ver., Gro., Oax., Tab., Camp., Yuc., Q.Roo, Chis.), Guat., Bel., Hond., Nic., C.R., Pan., Antill., S.A. (Col.). Chiapas Collections: *F 1200* (DS, pf); *F 3210* (DS, pf); *La 461* (DS); *Lu 17793* (LL, pf); *EM 95* (US); *EM 2153* (DS, F); *EM 5051* (F); *EM 15357* (F); *EM 15972* (F); *EM 16912* (F); *EM 18608* (DS, F); *Mol 24176* (LL); *N 3835* (US); *So 1585* (US); *T&L 40169* (DS); *T&L 41154* (DS); *T 1353* (DS, LL); *T 2097* (DS, F, LL); *T 2779* (DS, F, WIS); *T 3132* (LL); *T 3384* (DS, F); *T 3467* (DS); *T 3572* (DS, LL); *T 4616* (CAS); *6229*; *6999*; *7555*; *10043*; *10225*; *10752*; *11082*; *11121*; *11413*; *12648*; *14119*; *15204*; *21220*; *21468*; *21727*; *24069*; *25916*; *26190*; *26880*; *28293*; *28987*; *29132*; *29268*; *30191*; *30756*; *314520 33364*; *33880*; *34242*; *36805*; *36940*; *38608*;*40066*; *41718*;*41941*;*47243*; *48669*; *49749*; *48669*; *49224*; *49749*; *51890*; *52048*; *52310*; *53329*; *56119*; *57598*; *62133*.

In a difficult genus, var. *mexicanus* is perhaps the most difficult taxon to delimit and deal with, as a result of its considerable variability. In Chiapas there tends to be a dichotomy in leaf shape between those in the drier habitats of the Pacific Coastal Plain (leaves ovate, cordate, sometimes lobulate) and those of the wet forests elsewhere (leaves elliptic, truncate, simple). Other characters do not seem to correlate with leaf shape.

3. **Malvaviscus lanceolatus** Rose, Contr. U.S. Natl. Herb. 5:175. 1899.

—Type: Mexico, Chiapas, near Cicharras, Feb 12–15, 1896, *Nelson 3807* (US!; isotype: GH!).

Illustration: none found.

Small trees or large shrubs (1.5–)3–5 m tall, sparsely pubescent to glabrate. Leaves petiolate, sometimes ovate, more commonly lanceolate or elliptic (sometimes narrowly so), rarely weakly cordate, usually truncate to cuneate at base, crenate-serrate, acute or acuminate, glabrate above and beneath or with some pubescence persisting especially on principal veins. Flowers solitary in the leaf axils or more or less grouped apically; pedicels 1–6 cm long, slender, glabrate or with scattered pubescence; bracts of the involucel 6–8, linear (usually < 1 mm wide), subequal to calyx, spreading in flower, glabrous; calyx 12–15 mm long, glabrate, tubular; petals 4–5.5 cm long, pale red to bright red; androecium glabrous, prominently exserted, the column twisted and sometimes with a purplish cast; anthers ca. 25, purplish; styles 10, red-purple, exserted; stigmas capitate, red-purple. Fruits red, prominently 5-lobed, ca. 12 mm diameter.

On stream banks and in understory of Montane Rain Forest and Evergreen Cloud Forest; uncommon in Central Plateau and Sierra Madre; 1000 to 2000 m. Mex. (Nay., Jal., Mlos., Pue., Ver., Gro., Oax., Chis.), Guat., Nic., C.R. Chiapas Collections: *F 3203* (CHAPA, DS, ENCB, pf); *N 3807* (GH, US); *29495*; *30191*; *42521*; *56119*.

4. **Malvaviscus penduliflorus** DC., Prodr. 1:445. 1824.

—*Malvaviscus arboreus* Cav. var. *penduliflorus* (DC.) Schery, Ann. Missouri Bot. Gard. 29:233. 1942. —Type: Icones Florae Mexicanae *100*! (Torner Collection acc. no. 6331.1712, Hunt Institute).

Malvaviscus longifolius Garcke, Allg. Gartenz. 22:321. 1854. —*Malvaviscus arboreus* Cav. var. *longifolius* (Garcke) Schery, Ann. Missouri Bot. Gard. 29:218. 1942. —Type: cult. in Berlin Bot. Gard. ex Peru (B—destroyed, as photograph F—9427!).

Illustration: Krapovickas in Steyermark and Huber, Fl. Avila *pl. 196*. 1978; Fl. Lesser Antilles 5:238. *fig. 93*. 1989.

Shrubs 1–3 m tall, sparsely pubescent (the hairs recurved) to glabrate. Leaves petiolate, lanceolate to ovate, truncate, crenate-serrate, acute or acuminate, glabrate above and beneath. Flowers pendent, solitary in the axils or grouped apically; pedicels 2–4 cm long, with recurved pubescence; bracts of the involucel ca. 8, spatulate, equaling or shorter than the calyx, ciliate marginally; calyx 15–18 mm long, often yellowish with darker veins, tubular, 5-lobed, the tips of the lobes ciliate, otherwise glabrate; petals usually 6 cm long; androecium glabrous, equaling corolla or slightly exserted; anthers ca. 25, purplish; styles 10, slender, prominently exserted; stigmas capitate. Fruits unknown, the plants evidently sterile.

In gardens and persisting in abandoned gardens, not known in the wild; 0 to 2000 m. Widely cultivated throughout the tropics and subtropics as an ornamental shrub. Chiapas Collections: *Cz 3493* (XAL, pf); *T 3132* (DS); *6265*; *11048*.

5. **Malvaviscus urticifolius** (K. Presl) Fryx., Syst. Bot. 12:279. 1987.

—*Pavonia urticaefolia* K. Presl, Reliq. Haenk. 2:128. 1835. —Type: Mexico. "in terris occidentalibus," *Haenke s.n.* (lectotype: PR!; isotype: PR!).

Malvaviscus hintonii Bullock, Kew Bull. 1937:291. 1937. —*Malvaviscus arboreus* var. *hintonii* (Bullock) Schery, Ann. Missouri Bot. Gard. 29:217. 1942. —Type: Mexico. Distr. Temascaltepec, Tejupilco, *Hinton 3928* (K!; isotypes: A! NY!).

Illustrations: none known.

Shrubs 2 m (or more) tall, the stems coarsely pubescent, the hairs 1–2 mm long, whitish, more or less curly. Leaf blades 6–8 cm long, 2–3 cm wide (or if lobed to 6 cm wide), mostly narrowly lanceolate (rarely wider and trilobulate), truncate, coarsely crenate or serrate, acute, glabrate above, sparsely stellate-pubescent beneath or with simple hairs on main veins; petioles mostly ¼ length of blade; stipules ca. 3 mm long, subulate. Flowers solitary in the leaf axils or aggregated apically; pedicels 1.5–3 cm long, exceeding the subtending petioles; involucellar bracts 10–14 mm long, 0.5–1.5 mm wide, lanceolate, ciliate; calyx 12–15 mm long, yellowish, prominently ciliate on margins and veins (hairs 1.5–2 mm long); petals 3.5–5 cm long, white; staminal column exserted, pallid, glabrous, the filaments 1–2 mm long; styles exceeding androecium, somewhat pubescent, the stigmas villous. Fruits very rare, red, oblate, 8 mm diameter; flowering all year.

In Tropical Deciduous Forest (?) and along rivers (?), better known in garden cultivation; 1000–1400 m. Mex. (Mich., Méx., Ver., Chis.). Chiapas Collections: *T 5222* (MEXU, pf).

25. MODIOLA

Modiola Moench, Methodus 619. 1794. —Type: *Modiola multifida* Moench (≡*Modiola caroliniana* (L.) G. Don).

Trailing herbs. Leaves long-petiolate, symmetrical, 1.5–4 cm long, about as wide, usually palmately 5–7-parted; stipules ovate, 3–4 mm long, 1.5–3 mm wide. Pedicels solitary in the axils, more or less pubescent, usually shorter than the subtending petiole; bracts of the involucel 3, lanceolate, 4–5 mm long; calyx 5–7 mm long, 5-lobed, pubescent, the hairs 1–2 mm long; corolla 6–8 mm long, dark orange, often with a red center, drying rose; androecium included, yellowish. Mericarps green (maturing black), 5–6 mm high, with 2 apical spines 1.5–3 mm long, divided into 2 cells by an endoglossum; the lower cell indehiscent, manifestly rugose, the upper cell dehiscent, smoother, pubescent; seeds ca. 1.5 mm long, with sparse, minute pubescence; $x = 9$.

Modiola is a monotypic genus occurring from the United States to Argentina and also found in the Old World, frequently as a weed.

Reference: Kearney, T. H. 1951. The American genera of Malvaceae—*Modiola*. Amer. Midl. Naturalist 46:116–117.

1. **Modiola caroliniana** (L.) G. Don, Gen. Hist. 1:466. 1831.

—*Malva caroliniana* L., Sp. Pl. 688. 1753. ≡*Modiola multifida* Moench, Methodus 620. 1794. —Type: "7 caroliniana" (LINN—870.15, as microfiche!; isotype: S, as microfiche!).

Malva urticaefolia Kunth in H.B.K., Nov. Gen. Sp. 5:276 [folio ed. p. 215]. 1822. *Modiola urticifolia* (Kunth in H.B.K.) G. Don, Gen. Hist. 1:466. 1831. —Type: Nova Granada, prope Santa Fé de Bogotá, *Humboldt and Bonpland s.n.* (P—HBK as microfiche!).

Illustrations: **Fig. 20**; New Britton and Brown Illus. Fl. 2: 533. 1968; Radford et al. Man. Vasc. Fl. Carol. 701. 1964; Gray, Gen. Amer. Bor. *pl. 128.* 1849; Camargo, Cat. Ilus. Pl. Cundinamarca 4:172, *fig. 61.* 1969; Herter, Fl. Ilus. Uruguay, fasc. 13, *fig. 2121.* 1957; Krapovickas in Cabrera, Fl. Prov. Buenos Aires 4:186, *fig. 55.* 1965; Curtis Bot. Mag. 51:*t.2515.* 1824; Fawcett and Rendle, Fl. Jamaica 5: 103, *fig. 43.* 1926; Fryxell, Syst. Bot. Monogr. 25:307. *fig. 76.* 1988.

Roadsides, urban habitats, and in Pine-Oak-Liquidambar Forest and Pine-Oak Forest, frequently in disturbed situations; uncommon in the Central Plateau and Northern Highlands; 1000 to 2200 m. U.S., Mex. (Tam., Dgo., S.L.P., Nay., Jal., Qro., Hgo., Mich., Méx., D.F., Mlos., Pue., Ver., Chis.), S.A. (Bol., Chile, Braz., Arg., Parag., Urug.). Chiapas Collections: *C 700623–55* (CAS); *F 2594* (CHAPA, DS, pf); *La 1086* (DS); *T 2870* (DS, MO, pf).

26. NEOBRITTONIA

Neobrittonia Hochr., Annuaire Conserv. Jard. Bot. Genève 9:184. 1905. —Type: *Neobrittonia acerifolia* (G. Don) Hochr.

Shrubs 2–3 m tall, the stems with stellate hairs 2–3 mm long. Leaves petiolate, aceriform, cordate, 3–5-lobed, the central lobe the largest, crenate. Pedicels solitary, 3–10 cm long; involucel absent; calyx 10–12 mm long, stellate-pubescent; petals purple, 1.5–3 cm long; androecium <1 cm long, the filaments 2 mm long. Fruit globose-inflated, densely pubescent (especially when young), up to 4 cm diameter; mericarps 2–2.5 cm tall, 15–18 mm wide, with 2 basal spines 10–14 mm long with stellate pubescence; seeds 3 per mericarp, 3 mm long, warty; $x = 16$.

Neobrittonia is a monotypic genus, the single species occurring from Jalisco to Panama.

Reference: Hochreutiner, B. P. G. 1905. *Neobrittonia,* un nouveaux genre du Malvacées. Annuaire Conserv. Jard. Bot. Genève 9:184–188.

1. **Neobrittonia acerifolia** (G. Don) Hochr., Annuaire Conserv. Jard. Bot. Genève 9:184. 1905.

—*Sida acerifolia* Lagasca, Gen. Sp. Pl. 21. 1816 (non Medikus, 1787 [≡*Triguera acerifolia* Cav.], nec Zuccarini, 1806). —*Abutilon acerifolium* G. Don, Gen. Hist. 1:504. 1831. —Type: Hort. Reg. Matr., 1805, *Lagasca s.n.* (MA?).

Sida discissà Bertol., Mem. Mat. Fis. Soc. Ital. Sci. 23:305, *t.5.* 1844. *Abutilon discissum* (Bertol.) Schldl., Linnaea 25: 218. 1852. —Type: unknown.

Sida palmata Sessé & Mociño, Pl. Nov. Hisp. 110. 1889. —Type: Icones Florae Mexicanae *123*! (Torner Collection acc. no. 6331.1090, Hunt Institute).

Illustrations: **Fig. 21**; Bertoloni, loc. cit. *pl. 5.* 1844; Robyns, Ann. Missouri Bot. Gard. 52:571. *fig. 11.* 1965; Fryxell, Syst. Bot. Monogr. 25:310. *fig. 78.* 1988.

Roadsides and hillsides in Evergreen Cloud Forest and Pine-Oak Forest; common in Northern Highlands, Central Plateau, and Sierra Madre; 1800 to 2700 m. Mex. (Jal., Mich., Méx., Mlos., Chis.), Guat., Salv., Hond., Nic., C.R., Pan. Chiapas Collections: *Cro 64871* (CAS, MO, pf); *La 1814* (DS, MO, pf); *EM 84* (US); *Z 858* (DS); *24419*; *29220*; *29275*; *39534*; *50051*.

27. PAVONIA

Pavonia Cav., Diss. 2:(Addendum, unpaged). 1786; 3:132. 1787. nom. cons. —Lectotype (conserved type, Taxon 8:310. 1959): *Pavonia paniculata* Cav.

Malache Vogel in Trew, Pl. Select. 9:50, *t. 90.* 1772, nom. rejic. —Type: *Malache scabra* Vogel in Trew.

Prostrate perennial herbs, erect subshrubs, or shrubs, often stellate-pubescent, sometimes viscid, sometimes glabrate. Leaves petiolate, ovate, elliptic, lanceolate, oblanceolate, deltoid, sometimes lobed, sometimes asymmetrical, dentate or crenate (rarely entire). Flowers solitary or paired in the axils, or aggregated in racemes, panicles, or heads; involucel present, 4- to many-parted, the bractlets distinct or basally connate; calyx gamosepalous, 5-lobed; petals white, lavender, purple, or yellow, sometimes with a basal spot; staminal column included or exserted, sometimes declined with secund anthers, surmounted by 5 apical teeth; styles 10, exceeding androecium; stigmas capitate. Fruits schizocarpic, dry, minutely pubescent or glabrous; mericarps 5, usually indehiscent, sometimes winged, spined, rugose, or otherwise ornamented; seeds solitary; $x = 14$.

Pavonia is a genus of more than 200 species, of which more than 100 are South American. It is well represented in the Old World (especially Africa) and extends northward through Central America and the Antilles to the southern United States. Twenty-nine species occur in Mexico, 21 of them endemic to Mexico and an additional three virtually endemic. Seven species occur in Chiapas.

REFERENCES: STANDLEY, P. C. 1923. Trees and shrubs of Mexico—*Malache.* Contr. U.S. Natl. Herb. 23:770–773; KEARNEY, T. H. 1954. A tentative key to the North American species of *Pavonia.* Leafl. W. Bot. 7:122–130; FRYXELL, P. A. 1979. Una revisión del género *Pavonia* en México. Bol. Soc. Bot. México 38:7–34.

a. Leaves lanceolate, oblong, or oblanceolate; mericarps with 3 spines each, 2.5–6.5 mm long, usually retrorsely barbed.
  b. Leaves crenate-dentate, eciliate; flowers and fruits in crowded "heads"; involucel 4–6 mm long; fruits 6–8 mm diameter, the spines 2.5–5 mm long .... 5. *P. schiedeana*
  bb. Leaves subentire, hispid-ciliate on margin; flowers and fruits dispersed on widely branching racemes; involucel 6–9 mm long; fruits 9–13 mm diameter, the spines 4–6.5 mm long .... 1. *P. integrifolia*
aa. Leaves ovate, truncate or cordate; mericarps with spines reduced (in *P. submutica*) or lacking spines.
  c. Bracts of the involucel ca. 15, arcuate; flowers crowded on short pedicels .... 7. *P. submutica*
  cc. Bracts of the involucel 6–9; flowers not crowded.
    d. Corolla yellow with maroon center; bracts of involucel usually 6; plant pubescent, not prominently viscid .... 6. *P. sidifolia*
    dd. Corolla yellow or lavender without dark center; bracts of involucel 7–9; plant often viscid.
      e. Stems viscid and with long simple hairs (2–3 mm); flowers lavender (sometimes drying yellowish) .... 4. *P. purpusii*
      ee. Stems without long simple hairs; flowers yellow.
        f. Flowers in terminal panicles; involucel subequal to calyx; stipules falcate, recurved; mericarps about twice as long as column, reticulate-angulate .... 3. *P. paniculata*
        ff. Flowers solitary or paired in the axils; involucel about twice length of calyx; stipules linear, erect; mericarps equaling the column, smooth or nearly so .... 2. *P. monticola*

1. **Pavonia integrifolia** Standley, Publ. Field Mus. Nat. Hist., Bot. Ser. 8:24. 1930.

—TYPE: Mexico, Veracruz, Zacuapán, Apr 1927, *Purpus 11118* (F!; isotype: NY!).

ILLUSTRATION: none found.

Subshrubs up to 1 m tall, sparsely and minutely stellate-pubescent. Leaves oblanceolate, truncate, entire, with hispid-ciliate margins, penninerved, acuminate, discolorous, nearly glabrous. Panicles axillary, long-pedunculate, widely branching; involucel gamophyllous, ca. 8-toothed, 6–9 mm long; calyx 5-lobed, slightly shorter than to subequal to involucel; petals pink, 15–17 mm long; androecium 5–6 mm long, glabrous, declined. Fruit 9–13 mm diameter; mericarps 5, each with 3 retrorsely barbed spines 4–6.5 mm long, the central one apical, the lateral ones subapical and divergent; seeds solitary, 5.5 mm long, glabrous.

In understory of Montane Rain Forest and Pine-Oak-Liquidambar Forest; uncommon in Northern Highlands and Eastern Highlands; 1000–1500 m. Mex. (Ver., Chis.), Guat. CHIAPAS COLLECTIONS: *Dr 1560* (UC, US); *T&L 46097* (DS); *38927.*

2. **Pavonia monticola** Fryx., Phytologia 37:300. 1977.

—TYPE: Mexico, Chiapas, 11 miles NE of Tapanatepec on Chiapas-Oaxaca state line, 20 Oct 1965, *Breedlove and Raven 13716* (DS!; isotypes: F! MEXU! MO! pf!).

ILLUSTRATION: Fryxell, loc. cit. 314, fig. 11.

Shrubs to 2 m tall, the stems viscid with both stellate hairs and simple glandular hairs. Leaves petiolate, ovate, cordate, doubly serrate, acuminate, discolorous, pubescent above and beneath. Peduncles axillary, commonly paired, usually exceeding subtending petiole, viscid, articulated 7–13 mm below flower; bracts of involucel 8, linear, spreading, viscid, exceeding the calyx; calyx 6–8 mm long, ca. half-divided, the lobes ciliate (hairs 1–1.5 mm long); petals yellow, ca. 12 mm long; staminal column glabrous, almost equaling petals; styles glabrous; stigmas 10, slightly exserted. Fruit oblate or somewhat obovate; mericarps nearly smooth, narrowly winged, with a few retrorse barbs on lateral wing and at apex, otherwise glabrous; seeds solitary, glabrous, 4 mm long; Sep–Oct.

Roadsides, hillsides, and disturbed sites in Evergreen Seasonal Forest and Pine-Oak Forest; uncommon in the Sierra Madre near the Oaxaca border; 750 to 1000 m. Mex. (Oax., Chis.). CHIAPAS COLLECTIONS: *F 3233* (CHAPA, DS, MEXU, pf); *13716*; *20685*; *52718*; *54058.*

3. **Pavonia paniculata** Cav., Diss. 3:135, *t.46.f.2.* 1787.

—*Malache paniculata* (Cav.) Kuntze, Revis. Gen. Pl. 1: 70. 1891. —TYPE: Peru, ca. flum. Maragnon, *Dombey s.n.* (MA as photo BM!; isotype: P—LA, as microfiche!).

Althaea corymbosa Swartz, Prodr. 101. 1788. —*Pavonia corymbosa* (Swartz) Willd., Sp. Pl. 3:836. 1803. —*Pavonia paniculata* Cav. var. *corymbosa* (Swartz) Gürke, Martius Fl. Bras. 12(3):506. 1892. —TYPE: Jamaica, *Swartz s.n.* (S!).

Pavonia laxifolia A. St.-Hil., Fl. Bras. Merid. 1:226. 1827. —Type: Brazil, Minas Geraes, prope S. Maria de Baependy, *St.-Hilaire s.n.* (P).

Pavonia scabra K. Presl, Reliq. Haenk. 2:129. 1835 [non (Vogel) Cif., 1936, nec Benth. ex Garcke, 1881]. —*Malache scabra* (K. Presl) Kuntze, Revis. Gen. Pl. 1:71. 1891 (non Vogel in Trew, 1772). —Lectotype (Fryxell, Syst. Bot. Monogr. 25:333. 1988): Mexico, in serris mexicanis occidentalibus, *Haenke s.n.* (PR!; isolectotype: PR!).

Pavonia caracasana Turcz., Bull. Soc. Imp. Naturalistes Moscou 31:188. 1858. —Type: Venezuela, Caracas prope Galipan, 1845, *Funck and Schlim 191* (KW!; isotypes: BM! OXF!).

Pavonia heterophylla Turcz., Bull. Soc. Imp. Naturalistes Moscou 31:188. 1858. —Type: Mexico, in sylvis Oaxacae, *Galeotti 4092* [4192] (KW!; isotype: K!).

Illustration: Cavanilles, loc. cit.:*t.46.f.2.* 1787.

Subshrubs or shrubs up to 3 m tall, the stems stellate-pubescent with denser lines of pubescence decurrent from the stipules, also with glandular hairs especially in the inflorescence. Leaves petiolate, ovate, oblong, or 3-lobed, cordate, serrate, acute or acuminate, discolorous, minutely pubescent above and beneath. Inflorescence a widely branched viscid panicle, at least the upper parts leafless; flowers pedicellate; bracts of the involucel usually 7–8, linear, subequal to calyx, viscid and ciliate, often dark-pigmented; calyx ca. 6 mm long, ca. half-divided, often basally whitish; petals pale yellow to yellow-orange, 10–15 mm long; androecium included; staminal column pallid, the filaments as long as the column; anthers bright yellow; styles 10, pallid, glabrous, the stigmas slightly exceeding the stamens, capitate, reddish. Fruits 6–7 mm diameter, oblate; mericarps 5, twice the height of the column, reticulate-veined, subglabrous; seeds solitary, 3 mm long, minutely and sparsely scabridulous; $2n = 112$.

In disturbed ground and secondary vegetation and in Montane Rain Forest, Evergreen Seasonal Forest, and Pine-Oak Forest; common in Northern Highlands, Central Plateau, Sierra Madre, and Pacific Coastal Plain; 100 to 1300 m. Mex. (S.L.P., Pue., Ver., Oax., Chis.), Guat., Bel., Hond., Nic., C.R., Pan., Antill., S.A. (Col., Ven., Ecu., Peru, Bol., Braz.). Chiapas Collections: *F 891* (BH, CTES, DS, L, pf); *García 590* (CHAPA, DS, pf); *EM 82* (MEXU); *EM 90* (US, MO, pf); *EM 17243* (F); *T 1921* (DS, F); *T 2059* (F, DS, LL); *T 3673* (DS); *T 5293* (MEXU, pf); *7474*; *7562*; *9432*; *23879*; *33785*; *48615*; *49251*; *56434*; *56982*; *57190*.

4. **Pavonia purpusii** Brandegee, Zoe 5:250. 1908.

—*Malache purpusii* (Brandegee) Standley, Contr. U.S. Natl. Herb. 23:772. 1923. —Type: Mexico, Veracruz, Zacuapán, June 1906, *Purpus 1946* (UC!; isotypes: BM! F! as photograph F—56164! GH! MO! NY! US!).

Pavonia liebmannii Ulbr., Feddes Repert. Spec. Nov. Regni Veg. 13:516. 1915. —Type: Mexico [without locality], 1841–43, *Liebmann s.n.* (B—destroyed, as photograph F—9453!).

Malache fonsecana Standley, J. Wash. Acad. Sci. 14:239. 1924. —Type: El Salvador, near La Unión on Gulf of Fonseca, 13–21 Feb 1922, *Standley 20677* (US!; isotypes: GH! NY!).

Illustration: none found.

Widely branching shrub or subshrub 1–1.5 m tall, the stems viscid and with simple hairs 2–3 mm long. Leaves ovate, cordate, serrate or crenate, acuminate, somewhat discolorous, minutely pubescent above and beneath. Peduncles axillary, usually solitary, exceeding the subtending petiole, sometimes associated with a lateral axillary branch; bractlets of involucel 7–9, exceeding the calyx, lance-linear, viscid and ciliate; calyx 6–7 mm long, hirsute; petals 1.5–2.5 cm long, lavender with an indistinct darker spot at base; staminal column 10–15 mm long, pallid, glabrous, the filaments short (1 mm), the anthers yellow; styles 10, exceeding the androecium. Fruits 6–8 mm diameter, minutely pubescent; mericarps 5, equaling the column; seeds solitary, 4 mm long, minutely pubescent.

Roadsides and disturbed habitats in Tropical Deciduous Forest; rare in Central Depression; 600 to 800 m. Mex. (Ver., Oax., Chis.), Guat., Salv., Hond. Chiapas Collections: *37625*.

5. **Pavonia schiedeana** Steudel, Nomencl. Bot. ed. 2. 2:279. 1841.

≡*Pavonia rosea* Schldl., Linnaea 11:355. 1837 (non Wallich ex Moris, 1833). —*Malache rosea* (Schldl.) Kuntze, Revis. Gen. Pl. 1:71. 1891. —Type: Mexico, Veracruz, Hacienda de la Laguna, 1833, *Schiede s.n.* (B—destroyed, as photograph F—9467!, GOET! HAL?).

Illustration: Martius, Fl. Bras. 12(3):*pl. 87-II.* 1892.

Subshrubs or shrubs up to 2 m tall, minutely stellate-pubescent. Leaves short-petiolate, elliptic, oblong, or obovate (broadest above the middle), truncate, crenate-dentate, acute, slightly discolorous, sparsely and minutely stellate-pubescent above and beneath. Peduncles axillary, sometimes exceeding the subtending leaf, with dense head-like inflorescence at apex that is actually a condensed raceme; individual pedicels up to 12 mm long but usually much shorter; involucel basally gamophyllous, of ca. 8 bractlets, exceeding the calyx; calyx 4–5 mm long; petals 6–9 mm long, pink; androecium ca. equaling the petals. Fruit 6–8 mm diameter; mericarps 5, each with 3 retrorsely barbed spines 2.5–5 mm long, the central one the longest; seeds solitary, 4.5 mm long, glabrous.

In disturbed ground and secondary growth on forest margins, roadsides, stream banks, and fence rows in Tropical Rain Forest, Lower Montane Rain Forest, Montane Rain Forest, Seasonal Evergreen Forest, Tropical Deciduous Forest, Pine-Oak-Liquidambar Forest, and Lowland Riparian Forest; common in Eastern Highlands, Central Plateau, Central Depression, and Sierra Madre; 100 to 900 m. Mex. (S.L.P., Pue., Gro., Ver., Oax., Tab., Chis.), Guat., Bel., Hond., Salv., Nic., C.R., Pan., Antill., S.A. (Col., Ven., Fr. Guin., Ecu., Braz.). Chiapas Collections: *Ch 5003* (MEXU, pf); *Ch 5298* (MEXU, pf); *Cz 3510* (XAL, pf); *Dr 1566* (US); *F 3354* (CHAPA, MEXU, pf); *M&M 945* (WIS); *Mz 7288* (MEXU, pf); *Mz 7901* (MEXU, pf); *Mz 8468* (MEXU, pf); *Mz 9058* (MEXU, pf); *Mz 10610* (MEXU, pf); *Mz 10758* (MEXU, pf); *N 3320* (US); *Sp 202* (MO); *T 1165* (DS, LL); *T 1413* (DS); *T 1583* (DS, LL); *T 2504* (DS, LL); *T 2738* (DS, LL); *T&L 40568* (DS); *TW 2302* (CHAPA, pf); *6252*; *6318*; *14893*; *29183*; *38048*; *46907*; *48118*; *51659*; *51912*; *52496*; *53497*.

6. **Pavonia sidifolia** Kunth in H.B.K., Nov. Gen. Sp. 5:283 [folio ed. p. 220]. 1822.

—*Malache sidifolia* (Kunth) Kuntze, Revis. Gen. Pl. 1:71. 1891. —*Asterochlaena sidifolia* (Kunth) Hassler, Feddes Repert. Sp. Nov. Regni Veg. 8:114. 1910. —Type: inter Angosturam et Trapiche de D. Felix Farreras (Orinoco), *Humboldt and Bonpland 1077* (P—HBK as microfiche!;

isotype: B—herb. Willdenow no. 12694, as microfiche!, as photograph F—9496!).

Malache chiapensis Standley, Contr. U.S. Natl. Herb. 23: 772. 1923. —*Pavonia chiapensis* (Standley) Standley, Publ. Field Mus. Nat. Hist., Bot. Ser. 4:231. 1929. —Type: Mexico, Chiapas, Jiquipilas, 31 May 1904, *Goldman 1037* (US!).

Illustration: none found.

Widely branching shrubs or subshrubs to 1 m tall, the stems stellate-pubescent and with some glandular hairs especially on the older stems. Leaves petiolate (to short-petiolate on flowering branches), ovate, cordate, serrate, acute or acuminate, discolorous, soft-pubescent above and beneath. Flowers axillary, solitary, long-pedunculate; bracts of involucel 6, broadly lanceolate (2.5–4 mm wide), exceeding calyx; calyx 6–7 mm long, hirsute; petals ca. 2 cm long, bright yellow with maroon spot at base; androecial column ca. 5 mm long, maroon; anthers and pollen yellow-orange; styles 10, exceeding androecium, glabrous; stigmas capitate, pallid, villous. Fruits 6–8 mm diameter, oblate, with appressed barbs along medial costa and lateral margins of mericarps; mericarps 5, 1-seeded; seeds 3 mm long, glabrous, striate; $2n$ = ca. 56; Aug–Nov.

On roadsides, often in grassy situations, in Montane Rain Forest, Evergreen Seasonal Forest, Tropical Deciduous Forest, and Thorn Woodland; common in Northern Highlands, Central Depression, and Sierra Madre; 800 to 1000 m. Mex. (Oax., Chis.), Pan., S.A. (Ven., Guy., Peru, Bol., Braz., Parag., Arg.). Chiapas Collections: *F 1165* (BH, CTES, DS, GH, MICH, NA, UC, pf); *Go 1037* (US); *P 9224* (F, MO, UC); *R&R&M 876* (LL); 21598; *27349*; *28125*; *36689*; *47918*; *51119*; *52721*; *52869*; *54110*.

7. Pavonia submutica Fryx., Phytologia 37:297. 1977.

—Type: Mexico, Chiapas, 11 miles E of Tapanatepec, on Chiapas-Oaxaca state line, 20 Oct 1965, *Breedlove and Raven 13715* (DS!; isotypes: F! MEXU! pf!).

Illustrations: **Fig. 22**; Fryxell, loc. cit.:313, *fig. 10*; 316, *fig. 13C*; Fryxell, Syst. Bot. Monogr. 25:340. *fig. 85*. 1988.

Shrubs to 2 m tall, stellate-pubescent. Leaves petiolate, ovate, truncate to subcordate, finely serrate, acute, discolorous, stellate-pubescent above and beneath; peduncles axillary, solitary, 1–4 cm long, pubescent, usually crowded at the apices of the branches; bracts of the involucel ca. 15, arcuate, filiform, 20–30 mm long, copiously ciliate; calyx 10–18 mm long, more than half-divided, pubescent; petals yellow, ca. 2 cm long; staminal column 15 mm long, pallid, glabrous; anthers and pollen yellow; styles and stigmas 10, glabrous, slightly exceeding androecium. Fruits 8–10 mm diameter; mericarps 5, smooth, with one apical and two lateral points, these sometimes retrorsely barbed; seeds 4.5 mm long, glabrous; Oct–Jan.

On open, arid hillsides and roadsides in Tropical Deciduous Forest; uncommon in Sierra Madre near the Oaxaca border; 600 to 1000 m. Near-endemic, confined to western Chiapas and adjacent parts of Oaxaca. Chiapas Collections: *Daniel 5866* (CAS); *F 902* (BH, pf); *F 3232* (CHAPA, DS, MEXU, pf); *Ha 14399* (OSH, pf); *K 73154* (CHAPA, ENCB, pf); *Smith and Ruiz 3237* (US); *13715*; *49625*; *60167*.

28. PERIPTERA

Periptera DC., Prodr. 1:459. 1824. —Type: *Periptera punicea* (Lagasca) DC. (≡*Sida periptera* Sims).

Perennial herbs or subshrubs, pubescent or glabrescent. Leaves ovate, triangular, or hastate, sometimes 3-lobed, crenate or subentire, often with a purple blotch along the midvein. Flowers axillary and solitary or aggregated in terminal panicles or racemes; involucel absent; calyx pentamerous, gamophyllous, the lobes lanceolate; petals erect, usually narrow and bright red; androecium exserted, the column more or less pubescent, the anthers yellow or purple; styles 7–12; stigmas clavate. Fruit a schizocarp; mericarps 7–12, 1-seeded, spurred dorsally, the lateral walls evanescent at maturity; seeds glabrous; $x = 13$.

Periptera is a genus of five Mexican species that occurs from southern Sonora to Chiapas. The genus is endemic to Mexico except for a single record from Guatemala.

Reference: Fryxell, P. A. 1974. A revision of *Periptera* DC. (Malvaceae). Bol. Soc. Bot. México 33:39–46.

1. Periptera punicea (Lagasca) DC., Prodr. 1: 459. 1824.

—*Anoda punicea* Lagasca, Elench. Pl. 21. 1816. —Type: cult. Hort. Bot. Madrid (MA?).

Sida periptera Sims, Bot. Mag. *t.1644*. 1814. —*Periptera periptera* (Sims) Rose, Contr. U.S. Natl. Herb. 5:173. 1899. —*Anoda periptera* (Sims) Hochr., Annuaire Conserv. Jard. Bot. Genève 20: 41. 1916. —Type: Sims, loc. cit., *pl. 1644*.

Anoda incarnata Kunth in H.B.K., Nov. Gen. Sp. 5:266 [folio ed. p. 207]. 1822. —Type: Mexico, colitur in Horto Mexicano, *Humboldt and Bonpland 4039* (P—HBK as microfiche!).

Anoda periptera (Sims) Hochr. var. *macrantha* Hochr., Annuaire Conserv. Jard. Bot. Genève 20:43. 1916. —*Periptera macrantha* (Hochr.) Bullock, Kew Bull. 1937:77. 1937. —Lectotype (Bullock, Kew Bull. 1937): Mexico, Michoacán, Rincón, Morelia, *Arsène 64* (G—Del; isolectotype: K!).

Sida stenopetala M. E. Jones, Contr. W. Bot. 18:58. 1935. —Type: Mexico, Jalisco, Guadalajara, La Barranca, 16 Nov 1930, *Jones 27142* (POM!; isotype: GH!).

Illustrations: **Fig. 23**; Sims, loc. cit. *pl. 1644*. 1814.

Erect herb or subshrub with minute stellate pubescence. Leaves petiolate, usually triangular or hastate, to 9 cm long but smaller and narrower upward, sometimes with purple blotch along the midvein. Flowers axillary, usually solitary, the pedicels articulated, often aggregated in terminal panicles; calyx 5–8 mm long, 5-lobed, the lobes apiculate; petals erect, spatulate, 12–18 mm long, 1–5 mm wide, red; androecium manifestly exserted, 1.5–3 cm long; anthers 30-40, purplish, the pollen yellow. Fruits 7–9 mm diameter, puberulent; mericarps 10–12, 3 mm long with umbo 0.5 mm long; seeds 2 mm long, rugulose; $2n = 26$; Sep–Mar.

Often in open, grassy habitats in Tropical Deciduous Forest and Pine-Oak Forest; rare in Central Plateau and Central Depression; 800 to 1500 m. Mex. (Son., Chih., Sin., Dgo., Zac., Nay., Jal., Gto., Hgo., Mich., Méx., D.F., Mlos., Ver., Gro. Chis.), Guat. Chiapas Collections: *7942*; *13159*; *70831*.

29. PHYMOSIA

Phymosia Ham., Prodr. 49. 1825. —Type: *Phymosia abutiloides* (L.) Ham.
Sphaeroma (DC.) Schldl., Linnaea 11:352. 1837 (non Harvey, 1866). —Lectotype (Fryxell, 1971): *Malva rosea* DC.
Meliphlea Zucc., Abh. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. 2:359. 1837. —Type: *Meliphlea vitifolia* Zucc.

Shrubs or small trees, densely tomentose, the stellate hairs often stipitate. Leaves petiolate, aceriform, 3–7-lobed (or merely -angular), the central lobe the largest, cordate, crenate to subentire, obtuse, acute, or acuminate. Peduncles solitary in the axils, usually exceeding the subtending leaf, 1- to many-flowered, the branch sometimes forming a terminal panicle; involucel trimerous, the bracts distinct or forming a gamophyllous tube, sometimes caducous; calyx plicate in bud, 5-lobed, tomentose; petals showy, lavender or red, sometimes white; androecium included, glabrous, pallid; pollen yellow or orange; styles 10–40, sometimes strigose; stigmas obliquely capitate to unilaterally decurrent. Fruits globose to oblate, tomentose; mericarps reniform, thin, dehiscent; seeds reniform, glabrous; $x = 17$.

Phymosia is a genus of eight species, all Mexican except the type species, which occurs in Hispaniola and the Bahamas.

Reference: Fryxell, P. A. 1971. A revision of *Phymosia* (Malvaceae). Madroño 21:153–174.

a. Calyx 1.5–2 cm long; petals 2–3.5 cm long, burgundy or rose, the claw ciliate; involucellar bracts distinct, stipitate, persistent; leaves obscurely crenate to subentire .... 2. *P. umbellata*
aa. Calyx 2.5–4 cm long; petals 3.5–7 cm long, rose or white, the claw glabrous; involucellar bracts ovate-sessile or forming a gamophyllous tube, often caducous; leaves manifestly crenate-dentate .... 1. *P. rosea*

1. **Phymosia rosea** (DC.) Kearney, Leafl. W. Bot. 5:190. 1949.

—*Malva rosea* DC., Prodr. 1:435. 1824. —*Malvastrum roseum* (DC.) Hemsley, Biol. Centr.-Amer. Bot. 1:100. 1879. —Type: Icones Florae Mexicanae s.n.! (Torner Collection acc. no. 6331.745, Hunt Institute).
Sphaeralcea nutans Scheidw. ex Planchon, Fl. Serres Jard. Eur. 7:221. 1851–2. —Type: Planchon, loc. cit. *t.726*.
Illustrations: **Fig. 24**; Planchon, Fl. Serres Jard. Eur. 7:*t.726*. 1851–2; Paxton's Fl. Gard. 3:173. 1853; Fryxell, 1971:169, *fig. 7*; Fryxell, Syst. Bot. Monogr. 25:357. *fig. 91*. 1988.

Shrub or small tree 1.5–10 m tall, tomentose, the stellate hairs often stipitate, whitish to yellowish. Leaves petiolate, cordate, usually 5-lobed, the lobes dentate, acuminate. Peduncles 4–17 cm long, supporting a 1–3-flowered umbel; involucel 1.5–2.5 cm long, sometimes enclosing bud as gamophyllous tube, sometimes of 3 distinct broadly lanceolate bractlets, often caducous; calyx 2.5–4 cm long, ca. half-divided, densely yellow-puberulent; petals 3.5–7 cm long, rose or white, glabrous throughout (including claw); androecium usually shorter than petals, the filaments ca. 3 mm long; pollen yellow; styles 30–40; stigmas decurrent. Fruits oblate, 2–3.5 cm diameter; mericarps 30–40, 15–32 mm long; seeds 3 mm long; $2n = 34$.

In Montane Rain Forest and Pine-Oak Forest, often spared after clearing and occurring in fence rows and on roadsides, sometimes planted near dwellings as an ornamental shrub; common in Central Plateau and Sierra Madre; 1600 to over 3000 m. Mex. (Chih., Jal., Mich., Méx., Mlos., Pue., Gro., Ver., Oax., Chis.), Guat., Salv. Chiapas Collections: *Cz 3596* (XAL, pf); *La 356* (DS, MICH); *EM 2835* (DS, F, GH, MICH, MO, NA, US, pf); *EM 4637* (MO); *N 3236* (US, pf); *13733*; *41903*; *50116*.

2. **Phymosia umbellata** (Cav.) Kearney, Leafl. W. Bot. 5: 190. 1949.

—*Malva umbellata* Cav., Icones 1:64. *t.95*. 1791. —*Sphaeralcea umbellata* (Cav.) G. Don, Gen. Hist. 1:465. 1831. —*Sphaeroma umbellata* (Cav.) Schldl., Linnaea 11: 352. 1837. —Type: Madrid Bot. Gard. (holotype: MA; isotypes: BM! F! MO! P—JU no. 12201, as microfiche!).
Sphaeralcea galeottii Turcz., Bull. Soc. Imp. Naturalistes Moscou 31:186. 1858. —Type: Mexico. Puebla, Tehuacán, *Galeotti 4102* (isotypes: BR! K! P).
Illustrations: Cav. (loc. cit.) et Icones 5: *t.500 bis, f.104*. 1799; Kerner, Hort. Sempervir. *t.459*. 1816; Schrank, Samml. Zierpfl. *t.12*. 1817; Loddiges, Bot. Cab. 3:*t.222*. 1818; Loiseleur Deslongchamps, Herb. Amat. 7:*t.439*. 1824; Drapiez, Herb. Amat. Fl. 3:*t.169*. 1829; Nees & Sinnig, Samml. Schönbluh. Gew. *t.58*. 1829; Bot. Reg. 19:*t.1608*. 1833; Piccioli, Anotr. Colt. Fiori 2:*t.64*. 1834; Loudon, Fl. Gard. Orn. Gr. Pl. 6:21. 1848; J. Hort. Ser. 3, 10:63. 1885; Alexander, Addisonia 17:*t.555*. 1932; Kearney, Univ. Calif. Publ. Bot. 19:*t.1,f.C,D*. 1935; Fryxell, Madroño 21:164. *fig. 5*. 1971.

Shrubs or trees 2–8 m tall, the stems tomentose, the stellate hairs often stalked. Leaf blades mostly 6–15 cm long, palmately 5-lobed or -angled, cordate, crenate to subentire, acute, densely tomentose to glabrate; petioles mostly ½–1 times length of blade; stipules 4–7 mm long. Peduncles axillary, 4–13 cm long, tomentose, supporting a 1–4-flowered umbel; involucellar bractlets 1–2 cm long, with clearly defined basal stipe and distal blade, usually persistent; calyx 1.5–2 cm long, densely tomentose, the lobes ovate and 3-ribbed; petals 2–3.5 cm long, ciliate on margins of claw, otherwise glabrous, burgundy or rose; staminal column shorter than petals, the filaments ca. 3 mm long; styles 30–35, the stigmas obliquely capitellate or introrsely decurrent. Fruits 2–2.5 cm diameter, oblate; mericarps 30–35, 8–17 mm long, reniform; seeds 3 mm long; $2n = 34$; flowers all year.

In Tropical Deciduous Forest, occasionally in cultivation; 800–1100 m. Mex. (Tam., S.L.P., Qro., Méx., D.F., Hgo., Pue., Ver., Chis.). Chiapas Collections: *69939*; *66984*.

30. ROBINSONELLA

Robinsonella Rose & E. G. Baker, Gard. & Forest 10:244. 1897. —Lectotype (Roush, 1931): *Robinsonella cordata* Rose & E. G. Baker.

Rebsamenia Conz., Gén. Veg. Méxic. 117. 1903. —Type: *Rebsamenia arborea* Conz.

Trees or shrubs with stellate or lepidote pubescence, sometimes also with long simple hairs, sometimes glabrate. Leaves petiolate, cordate, ovate to palmately lobed, dentate to subentire, acute or acuminate. Flowers borne in open axillary panicles or in condensed axillary racemes (sometimes appearing fasciculate), fragrant; involucel absent; calyx deeply 5-lobed, valvate in bud; petals lavender, white, or yellowish, sometimes with purple veins or dark spot on claw; androecium usually pallid, included; styles 8–30; stigmas capitate. Fruit schizocarpic; mericarps inflated (or the lateral walls connate about the seed, thin-walled, unornamented; seeds solitary, sparsely and minutely pubescent; $x = 16$.

Reference: Fryxell, P. A. 1973. A revision of *Robinsonella* Rose & E. G. Baker (Malvaceae). Gentes Herb. 11:1–26.

a. Inflorescence an open axillary panicle or raceme.
  b. Inflorescence usually shorter than the subtending petiole; calyx lobes and petals reflexed .... 4. *R. mirandae*
  bb. Inflorescence longer than the subtending petiole; calyx lobes and petals not reflexed.
    c. Climax leaves manifestly 3-lobed; claw of petals glabrous .... 3. *R. lindeniana* subsp. *divergens*
    cc. Climax leaves simple to (at most) angulate; claw of petals ciliate.
      d. Leaves symmetrically elliptic, glabrous .... 2. *R. glabrifolia*
      dd. Leaves asymmetrically ovate-angulate, coarsely pubescent.
        e. Staminal column scabrous, styles pubescent; lower leaf surface stellate-pubescent; styles and mericarps fewer than 25 .... 1. *R. brevituba*
        ee. Staminal column and styles glabrous; vesture of lower leaf surface principally of minute lepidote hairs; styles and mericarps ca. 30 .... 6. *R. samaricarpa*
aa. Inflorescence a dense axillary raceme, often with shortened internodes, sometimes appearing fasciculate; individual pedicels usually paired.
  f. Leaves notably pilose on main veins beneath; pedicels 0.5–2.5 cm long, puberulent; petals 18–23 mm long .... 7. *R. speciosa*
  ff. Leaves glabrate beneath; pedicels 2–4 cm long, pilose; petals 12–16 mm long .... 5. *R. pilosissima*

1. **Robinsonella brevituba** Fryx., Gentes Herb. 11:16. 1973.

—Type: Mexico, Oaxaca, Chiltepec, *Martínez-Calderón 565* (A!; isotypes: MEXU! UC! US!).
Illustration: Fryxell, 1973:9, *fig. 6C.*

Trees to 10 m tall, the young branches densely yellowish-tomentose. Leaves petiolate, up to 18 cm long, asymmetrically lanceolate to ovate, cordate, remotely denticulate to subentire, acuminate, stellate-puberulent above and beneath, more densely so beneath. Inflorescence an axillary panicle exceeding the subtending petiole, the peduncle stellate-tomentose, 1–2 cm long, articulated 5–7 mm below the flowers; calyx 5–8 mm long, minutely puberulent, the lobes ecostate, acute or minutely apiculate, reflexed in fruit; petals 8–16 mm long, white or lavender (purplish basally?), marginally ciliate on lower half, otherwise glabrous; staminal column 2–3 mm long, scabrous, the filaments 4–6 mm long; styles 15–23, pubescent. Mericarps 15–23, stellate-pubescent, the fruit globose (resembling fruit of *Phymosia*); Apr.

In Lower Montane Rain Forest; rare in Northern Highlands; ca. 1000 m (lower elsewhere). Mex. (Ver., Oax., Chis.). Chiapas Collections: *Ne 5623* (MO, pf).

2. **Robinsonella glabrifolia** Fryx., Syst. Bot. 10: 269. 1985.

—Type: Mexico, Chiapas. Mpio. La Trinitaria, 10 km ENE of Dos Lagos above Santa Elena, 1170 m, 9 Feb 1982, *Breedlove 58430* (CAS!; isotypes: US! pf!).
Illustration: Fryxell, loc. cit.:270, *fig. 2.* 1985; Saunders & Fryxell, Sida 13:159. *fig. 1.* 1988.

Trees up to 25 m tall, the young twigs minutely and densely puberulent becoming sparsely puberulent with grayish bark and frequent lenticels. Leaves petiolate, narrowly ovate to elliptic, up to 13 cm long, 7 cm wide, basally truncate, entire, acuminate, palmately 5–7-nerved, glabrous, finely reticulate-veined. Inflorescence axillary, 5–9 cm long (ca. twice length of subtending petiole), each a leafless raceme, the pedicels in fascicles of 2–4, slender, up to 15 mm long; calyx 5 mm long, divided nearly to the base, the lobes valvate in bud, acute, minutely puberulent, greenish; petals evidently white with purple veins at base. Mericarps 7–9, tomentulose, 10–12 mm long; seed solitary at base of mericarp, 3 mm long, minutely pubescent; Jan–Feb.

In Montane Rain Forest; rare in Eastern Highlands and Central Plateau; 900 to 1200 m. Mex. (Chis.), Guat. Chiapas Collections: *T 7472* (MEXU, pf); *48817*; *58430*.

3. **Robinsonella lindeniana** (Turcz.) Rose & E. G. Baker subsp. **divergens** (Rose & E. G. Baker) Fryx., Gentes Herb. 11:12. 1973.

—*Robinsonella divergens* Rose & E. G. Baker, Gard. & Forest 10:245. 1897. —Lectotype (Fryxell, loc. cit.): Costa Rica, San José, Apr 1894, *J. D. Smith 4751* (US!; isolectotypes: GH! K!).

Robinsonella edentula Rose & J. D. Smith, Bot. Gaz. 37: 417. 1904. —Lectotype (chosen by Fryxell, loc. cit.): Guatemala, Cobán, Nov 1902, *von Türckheim II-665* [distributed by J. D. Smith as no. 8382] (US!; isotypes: BR! F! GH! MICH! NY! O! US!).

Illustration: Fryxell, 1973:*figs. 4B, 5, 6B.*

Trees to 10 m tall, the stems and peduncles densely stellate-tomentose. Leaves petiolate, cordate, 3-lobed (or upper leaves simple, angular), subentire, acute, somewhat discolorous. Flowers in axillary panicles; calyx 5–7 mm long, divided nearly to the base, the lobes somewhat reflexed in fruit; petals 6–12 mm long, white or white with lavender veins, glabrous throughout; staminal column 2–5 mm long, glabrous; stamens 15–25; styles 8–12, glabrous. Mericarps 8–12, inflated, pubescent, 9–11 mm long, 4–5 mm wide; seeds solitary at base of mericarp, ca. 2 mm long, minutely scabrous; Nov–Mar.

In Evergreen Seasonal Forest and Pine-Oak-Liquidambar Forest, sometimes planted for ornament; common in Northern Highlands, Central Plateau, and Sierra Madre; 800 to 1700 m. Mex. (Chis.), Guat., Nic., Hond., C.R. Chiapas Collections: *Lm 3850* (PH); *EM 86* (MEXU, MICH, US); *Mi 5150* (US); *Mi 5718* (MEXU, US); *Mi 5840* (MEXU, US); *O 142* (CAS, F); *T 3493* (DS, MO, pf); *32761*; *47393*; *48453*; *48623*; *49006*; *49394*; *57167*.

4. **Robinsonella mirandae** Gómez-Pompa, Bol. Soc. Bot. México 27:37. 1962.

—Type: Mexico, Veracruz, Chichipilco, en las faldas del Volcán San Martín, 1 Dec 1960, *Vázquez-Soto 21* (MEXU!; isotypes: MEXU! pf!).

Illustration: Pennington and Sarukhán, Arboles Tropicales de México, p. 287, 1968.

Trees 20–35 m tall, the twigs densely stellate-tomentose becoming glabrate. Leaves petiolate, ovate, up to 17 cm long, truncate to markedly cordate, subentire, acute, discolorous, densely and minutely matted-puberulent beneath, glabrate above. Inflorescence a reduced axillary panicle (often merely racemose), usually shorter than the subtending petiole, the pedicels ca. 1 cm long; calyx 5–6 mm long, stellate-tomentose, the lobes lanceolate, apiculate, reflexed in fruit; petals 7–8 mm long, white with contrasting dark purple spot at base, ciliate on margin of claw, otherwise glabrous, reflexed; staminal column 4–5 mm long, basally pubescent, the filaments 3–5 mm long; styles 10–13, minutely pubescent, sometimes dark-pigmented; mericarps 10–13, divergent, oblong, 6–7 mm long, samaroid; seeds solitary, basal, 2 mm long; Dec–Mar.

In Lower Montane Rain Forest; rare in Northern Highlands; 800 to 1000 m. Mex. (Ver., Oax., Tab., Chis.). Chiapas Collections: *Ne 5622* (MO, pf).

5. **Robinsonella pilosissima** Fryx., Gentes Herb. 11:19. 1973.

—Type: Mexico, Chiapas, 5.6 miles E of Chiapa de Corzo, 29 Jan 1965, *Breedlove 8459* (BH!; isotypes: DS! F! MICH!).

Illustrations: **Fig. 25**; Fryxell, 1973:*figs. 4G, 7D.*

Trees to 12 m tall, the stems pilose becoming glabrate. Leaves petiolate, deeply cordate, broadly ovate or somewhat 3-lobed, dentate to subentire, acute or acuminate, sparsely pubescent to glabrate. Flowers appearing fasciculate in short axillary racemes; pedicels 2–4 cm long, densely pilose, the hairs 1–1.5 mm long; calyx 7–11 mm long, ca. half-divided, densely pilose; petals 12–16 mm long, blue or purple, pubescent externally and on claw; staminal column 4–5 mm long, pubescent; stamens 60–75; styles 15–20, glabrous; mericarps 15–20, inflated, pubescent, 10–14 mm long, 5–6 mm wide; seeds solitary at base of mericarp, 3 mm long, pubescent.

In Tropical Deciduous Forest; uncommon in Central Depression; 600 to 1000 m. Mex. (Chis.). Endemic. Chiapas Collections: *MC 2148* (F); *La 172* (CAS, ENCB, F, LL); *Mi 7095* (MEXU); *Mi 7096* (MEXU, US); *8459*; *9111*; *30370*; *50468*.

6. **Robinsonella samaricarpa** Fryx., Gentes Herb. 11:13. 1973.

—Type: Mexico, Chiapas, 2.1 miles E of Pichucalco, 21 Jan 1969, *Fryxell and Bates 879* (BH!; isotypes: CTES! DS—2! MEXU! NA! pf!).

Illustration: Fryxell, 1973:*figs. 3, 4C, 5, 6E, 8.*

Tree to 25 m tall, the stem hairs mostly sublepidote, extremely small. Leaves petiolate, subtruncate to cordate, ovate or slightly lobulate, remotely dentate or undulate to subentire, acute or acuminate, glabrate. Flowers in axillary panicles; calyx 7–8 mm long, divided nearly to the base, minutely lepidote-pubescent; petals 8–10 mm long, white with purplish veins, ciliate on claw and on margin, otherwise glabrous; staminal column 2 mm long, glabrous; stamens 40–50; styles ca. 30, glabrous. Mericarps ca. 30, the walls connate about the seed, minutely stellate-pubescent, 7–8 mm long, 4 mm wide; seeds solitary in center of mericarp, 1.8 mm long, minutely pubescent; Jan–Mar.

Lower Montane Rain Forest; uncommon in Northern Highlands; 100 to 1000 m. Mex. (Ver., Oax., Tab., Chis.). Chiapas Collections: *Ch 776* (XAL); *F 682* (BH, pf); *F 879* (BH, CAS, CTES, MEXU, NA, pf); *F 886* (BH, DS, pf); *G-Q 3463* (ENCB).

7. **Robinsonella speciosa** Fryx., Gentes Herb. 11: 18. 1973.

—Type: Guatemala, Chimaltenango, above Las Calderas, 15 Dec 1938, *Standley 59992* (A!; isotypes: F! as photograph F—56144! US!).

Illustration: Fryxell, 1973:*figs. 4F, 7B.*

Trees to 15 m tall, the twigs minutely puberulent but soon glabrate. Leaves petiolate, ovate, truncate or somewhat cordate, remotely dentate to subentire, acuminate, glabrate except pilose on main veins beneath. Flowers on short axillary racemes; pedicels 1–2.5 cm long, minutely puberulent; calyx 7–14 mm long, divided nearly to the base, minutely puberulent; petals 18–23 mm long, blue or purple (sometimes white), ciliate on claw, otherwise glabrous; staminal column 5–10 mm long, glabrous or pubescent; mericarps 10–15, inflated, pubescent, 12–14 mm long, 5–6 mm wide; seeds solitary at base of mericarp, 3 mm long, pubescent; Nov–Mar.

In Montane Rain Forest, Tropical Deciduous Forest, and Pine-Oak Forest; common in Central Plateau and Sierra Madre; 1200 to 2100 m. Mex. (Oax., Chis.), Guat., Salv., occasionally planted as an ornamental within its natural range. CHIAPAS COLLECTIONS: *Lm 3749* (PH); *Mi 5058* (MEXU); *Mi 6171* (MEXU); *22837*; *31093*; *41754*; *50147*; *50218*; *50344*.

In Chiapas the white-flowered forms occur in Pine-Oak Forest and Tropical Deciduous Forest in the Central Plateau, whereas the blue-flowered forms are found in Montane Rain Forest and Evergreen Cloud Forest in the Sierra Madre. They do not appear to be otherwise differentiated.

31. SIDA

Sida L., Sp. Pl. 683. 1753; Gen. Pl. ed. 5. 306. 1754. —LECTOTYPE (Britton and Brown, 1913): *Sida alnifolia* L.

Perennial herbs or subshrubs, erect or prostrate, glabrous or pubescent, sometimes viscid. Leaves ovate (sometimes lobed), elliptic, or linear, usually dentate. Flowers solitary in the axils, in axillary glomerules, or in dense or open terminal inflorescences; involucel absent; calyx gamosepalous, 5-lobed, usually 10-costate at the base and angularly plicate in bud; corolla white, yellow, orangish, rose, or purple, sometimes with a red center; androecium included, usually pallid. Fruits schizocarpic, glabrous or pubescent; mericarps 5 or more, 1-seeded, usually reticulate on lateral walls, indehiscent below with well differentiated dorsal wall, more or less dehiscent apically with two more or less well differentiated spines; seeds glabrous; $x = 7$ or 8.

Sida is a genus of ca. 150 species from the Americas, Africa, Asia, and Australia, of which 35 occur in Mexico.

REFERENCES: KEARNEY, T. H. 1954. A tentative key to the North American species of *Sida* L. Leafl. W. Bot. 7:138–150; FRYXELL, P. A. 1985. Sidus sidarum V. The North and Central American species of *Sida* L. Sida 11:62–91.

a. Plants procumbent (to ascending) perennial herbs.
  b. Leaves distichous, markedly asymmetrical; plant repent; calyx accrescent .... 12. *S. jussieana*
  bb. Leaves spirally disposed, symmetrical; plants not rooting at the nodes; calyx not accrescent.
    c. Flowers solitary in the axils, scattered; mericarps 5, unornamented; stems usually with long (1–2 mm) simple hairs .... 1. *S. abutifolia*
    cc. Flowers congested at tips of branches; mericarps 5–8, with spiny murications; stems with appressed stellate hairs .... 5. *S. ciliaris*
aa. Plants erect perennial herbs or subshrubs.
  d. Leaves ovate, cordate, serrate to the base.
    e. Mericarps (and styles) uniformly 5, with antrorsely pubescent spines (or spines suppressed).
      f. Flowers subsessile, in sometimes pedunculate axillary glomerules; stems usually hispid; plants reclining or scandent .... 18. *S. urens*
      ff. Flowers pedicellate, solitary in the axils or in open terminal panicles; stems not hispid; plants erect or reclining.
        g. Plants reclining or scandent, glandular-pubescent .... 9. *S. glabra*
        gg. Plants erect, stellate-puberulent .... 17. *S. spinosa*
    ee. Mericarps (and styles) sometimes 5 but usually 6–12, with retrorsely barbed spines (or spines suppressed).
      h. Plants prominently setiferous in addition to other pubescence; flowers usually subsessile in axillary glomerules, these often aggregated into racemiform or paniculate inflorescence; mericarps submuticous, weakly if at all reticulate .... 3. *S. aggregata*
      hh. Plants stellate-pubescent, not setiferous; flowers usually pedicellate; mericarps usually with retrorsely barbed spines.
        i. Flowers in panicles; midstem leaves often broadly ovate; spines of mericarps variably developed, sometimes imperfectly barbed .... 7. *S. cordifolia*
        ii. Flowers axillary; midstem leaves lance-ovate; spines of mericarps retrorsely barbed.
          j. Calyx 5–6 mm long, pentamerous; fruits 4–5 mm diameter; spines of mericarps 1.7–3 mm long .... 16. *S. salviifolia*
          jj. Calyx 7–9 mm long, often irregularly 6–9-lobed; fruits 6–7 mm diameter; spines of mericarps <1 mm long .... 4. *S. barclayi*
  dd. Leaves linear, elliptic, lance-ovate, or rhomboid, sometimes basally entire.
    k. Leaves entire, linear-lanceolate; inflorescence corymbiform, above the leaves; mericarps unornamented; corolla white with red center .... 13. *S. linifolia*
    kk. Leaves serrate at least distally; flowers variously disposed, usually among the leaves; mericarps usually apically spinose and/or laterally reticulate; corolla color various.
      l. Leaves and branches distichous; stipules prominent, 3–5-nerved.
        m. Mericarps 5; leaves softly tomentose, subacute to obtuse .... 11. *S. jamaicensis*
        mm. Mericarps 7–11; leaves glabrate to coarsely hirsute, acute .... 2. *S. acuta*
      ll. Leaves and branches spirally disposed; stipules less prominent, 1–3-nerved.
        n. Leaves narrowly linear, often 15–20 times as long as wide .... 8. *S. elliottii*

- nn. Leaves lance-ovate, elliptic, or rhomboid, 2–6 times as long as wide.
  - o. Leaves elliptic, subacute or obtuse; corolla rose or purple (with yellow center); flowers and fruits congested apically, the internodes abruptly shortened .... 15. *S. rzedowskii*
  - oo. Leaves lance-ovate or rhomboid, usually acute; corolla yellow or yellow-orange; flowers and fruits axillary, or if aggregated apically the internodes not abruptly shortened.
    - p. Upper leaf surface with minute stellate hairs (<0.1 mm long) or glabrate; hairs longer than 0.1 mm absent anywhere on plant .... 14. *S. rhombifolia*
    - pp. Upper leaf surface usually with appressed simple hairs ca. 0.5 mm long; stems, petioles, lower leaf surfaces, and calyces often pubescent with hairs >0.2 mm long.
      - q. Mericarps 10–12; leaves more or less coarsely pubescent beneath, especially on veins; pedicels often much longer than calyx; corolla yellow without dark center .... 10. *S. haenkeana*
      - qq. Mericarps 5–8; leaves finely tomentose beneath; pedicels often shorter than calyx (but up to twice length of calyx); corolla often with dark center.
        - r. Mericarps 5; stipules commonly 3-nerved; calyx 5–7 mm long; corolla white (or pale yellow) with red center .... 19. *S. viarum*
        - rr. Mericarps 6–8; stipules 1-nerved; calyx 7–10 mm long; corolla yellow or yellow-orange with maroon center .... 6. *S. collina*

1. Sida abutifolia Miller, Gard. Dict. ed. 8. no. 12. 1768.

—Type: in cult., *Miller s.n.* (BM!). Note: The name is given as "abutilifolia" on the type specimen and in Index Kewensis.

Sida procumbens Swartz, Prodr. 101. 1788. —Lectotype (Fryxell, Sida 7:231. 1978): Hispaniola, *Swartz s.n.* (S!; isolectotype: BM!).

Sida supina L'Hér.. Stirp. Nov. 109 bis, *t.52* bis. 1789. —Type: in Hort. Paris, ex Hispaniola (isotypes: G—DC, as microfiche!; MA, as photograph F—29790!).

Sida diffusa Kunth in H.B.K., Nov. Gen. Sp. 5:257 [folio ed. p. 200]. 1822. —Type: Mexico, [Guanajuato,] Zelaya, *Humboldt and Bonpland s.n.* (P—HBK as microfiche!; isotype: B—herb. Willdenow no. 12673, as microfiche! as photograph F—9799!).

Sida filiformis Moric. ex Ser., Bull. Bot. 6:174. 1830 (non Jacquin, 1767). —Type: Mexico, Tampico, *Berlandier 220* (isotype: OXF!).

Sida filicaulis Torrey & A. Gray, Flor. N. Amer. 1:232. 1838. —Type: United States, Texas, 1835, *Drummond s.n.* (NY!; isotype: K!).

Plus several other synonyms.

Illustrations: cited above, plus: Syst. Bot. Monogr. 25:375. *fig. 97.* 1988; Fl. Lesser Antilles 5:238. *fig. 95.* 1989.

Procumbent perennial herbs, the stems usually with patent simple hairs 1–2 mm long. Leaves long-petiolate, ovate-cordate, crenate to the base, obtuse to acute, up to 1.5 cm long (occasionally larger), pubescent above and beneath; stipules inconspicuous. Pedicels solitary in the axils, slender, 1–2.5 cm long; calyx hirsute, 4–5(–7) mm long, the lobes acuminate; corolla white, 5–6 mm long. Fruits conical, pubescent; mericarps 5, apically 2-spined, the spines ca. 1 mm long, antrorsely pubescent; $2n = 14$.

Roadsides, pastures, disturbed areas, often in arid and semi-arid exposed sites in Tropical Deciduous Forest; uncommon in Central Depression and Pacific Coastal Plain; 200 to 800 m (higher elsewhere). Southern U.S., Mex. (Baja C., Baja C.S., Son., Chih., Coah., N.L., Tam., Sin., Dgo., Zac., S.L.P., Nay., Jal., Aguasc., Gto., Qro., Hgo., Cma., Mich., Méx., D.F., Mlos., Pue., Ver., Gro., Oax., Tab., Camp., Yuc., Chis.), Guat., Antill., S.A. (Col., Ven., Ecu., Peru, Braz.). Chiapas Collections: *Mi 5515* (MEXU); *26894*; *28013*; *40547*; *41525*; *55065*.

2. Sida acuta Burman f., Fl. Indica 147. 1768.

—Lectotype (Borssum Waalkes, Blumea 14:187. 1966): Java, *s.coll. s.n.* (G).

Sida carpinifolia L. f., Suppl. Pl. 307. 1781. —*Sida acuta* Burm. f. var. *carpinifolia* (L. f.) Schumann, Martius Fl. Bras. 12(3):326. 1891. —Type: Madeira, Masson s.n. (isotype: BM!).

Plus numerous other synonyms.

Illustrations: Reichenbach, Iconogr. Bot. Exot. pt. 1. *pl. 33.* 1824; Rodrigo, Revista Mus. La Plata, Secc. Bot. n.s. 6: 156, *fig. 29.* 1944; Krapovickas in Steyermark and Huber, Fl. Avila, *pl. 197.* 1978; Fryx., Syst. Bot. Monogr. 25:375. *fig. 97.* 1988.

Erect shrubs or subshrubs ca. 1 m tall, with distichous branching and leaf arrangement, more or less hirsute to glabrate. Leaves short-petiolate, lanceolate to ovate, 3–9 cm long, truncate, serrate at least distally, acute, hirsute to glabrate, concolorous; stipules prominent, broadly falcate and often exceeding the petiole. Flowers solitary or paired in the axils, the pedicels short, more or less equaling the petioles; calyx 6–8 mm long, often ciliate, ca. half-divided, basally 10-costate; petals white, yellow, or yellow-orange (commonly polymorphic for color in a single population), 7–10 mm long; androecium included, pallid. Fruits schizocarpic; mericarps 8–10, the apical spines variably developed; $2n = 28$.

On roadsides, and commonly weedy in disturbed ground (including urban habitats), and in Tropical Deciduous Forest and Evergreen Seasonal Forest; common in Gulf Coastal Plain, Northern Highlands, Eastern Highlands, Central Plateau, Central Depression, Sierra Madre, and Pacific Coastal Plain; 0 to 1400 m. Mex. (Son., N.L., Tam., Sin., S.L.P., Nay., Jal., Cma., Mich., Méx., Pue., Ver., Gro., Oax., Tab., Camp., Yuc., Q.Roo, Chis.), Guat., Bel., Hond., Salv., Nic., C.R., Pan., Antill., S.A. (Col., Ven., Guy., Sur., Fr. Guin., Ecu., Peru, Bol., Braz., Arg., Parag., Urug.), Afr., Asia, Pac. Basin, Australia. Chiapas Collections: *Cz 3380* (XAL, pf); *C15* (DS); *La 1287* (DS); *La 1552* (DS); *La 2616* (DS); *EM 2170* (F); *Me 2045* (US); *Mi 5476* (MEXU); *R&R&M 873* (WIS, pf); *T 3004* (DS); *T 3271* (DS); *V&S 64-7* (DS); *6547*; *10302*; *10629*; *13274*; *19792*; *19982*; *20008*; *20929*; *20929-A*; *26895*; *28019*; *29064*; *36766*; *36808*; *37362*; *44443*.

Several species of *Sida*, but especially the ubiquitous

S. acuta, are known as "escobilla" and widely used in many parts of the Neotropics for making simple brooms.

3. **Sida aggregata** K. Presl, Reliq. Haenk. 2:106. 1835.

—Type: Mexico, *Haenke s.n.* (PR).

Sida setifera K. Presl, Reliq. Haenk. 2:105. 1835. —Type: in terris mexicanis occidentalibus, *Haenke s.n.* (PR? W, as photograph F—32642!).

Sida arguta K. Presl, Reliq. Haenk. 2:106. 1835 (non Swartz, 1788). —Type: Mexico, ad portum Acapulco, *Haenke s.n.* (PR!).

Sida savannarum Schumann, Martius Fl. Bras. 12(3):308. 1891. —Type: Brit. Guiana, 1842, *Schomburgk 819* (B—destroyed, as photograph F—9395!).

Sida ampla M. E. Jones, Contr. W. Bot. 15:146. 1929. —Type: Mexico, Nayarit, Acaponeta, 25 Feb 1927, *Jones 22858* (POM!; isotypes: CAS! F! NY—2! WIS—2! pf!).

Illustration: none found.

Shrubs to 1.5 m tall, erect, branching, the stems, petioles, and especially the calyces setiferous (the hairs 1.5–2 mm long) in addition to other pubescence. Leaves petiolate, 5–13 cm long, cordate, ovate to somewhat 3-lobed, serrate, acuminate, softly stellate-tomentose above and beneath; stipules subulate, 4–9 mm long. Flowers subsessile, in dense terminal spiciform aggregations that are branched to form paniculate inflorescences; calyx 6–7 mm long, prominently 10-angled, densely hirsute; corolla yellow or yellow-orange. Mericarps 5–8, submuticous, essentially unornamented, 2 mm high; $2n = 14$.

In Pine-Oak Forest, Tropical Deciduous Forest; uncommon in Sierra Madre and Pacific Coastal Plain; 0 to 1000 m. Mex. (Son., Sin., Nay., Jal., Cma., Mich., Méx., Ver., Gro., Oax., Chis.), Salv., Hond., Nic., C.R., Pan., Antill., S.A. (Ven.). Chiapas Collections: *EM 93* (MO); *EM 17228* (F, K); *30236*.

4. **Sida barclayi** E. G. Baker, J. Bot. 30:236. 1892.

—Type: El Salvador, Gulf of Fonseco, Sierra de Conchagua, *Barclay s.n.* (BM!).

Sida anomalocalyx Fryx., Syst. Bot. 4:255. 1979. —Type: Mexico, Chiapas, Mpio. La Trinitaria, W of Hwy. 190 on road to Boquerón and Ejido Mujica, 5 Dec 1976, *Breedlove 42230* (DS!; isotypes: ENCB! MO! pf!).

Illustration: Fryxell, Syst. Bot. 4:255, *fig. 2.* 1979.

Erect subshrubs, softly tomentose, the branches ascending. Leaves short-petiolate, cordate or truncate, ovate to lanceolate, denticulate, acute, softly tomentose above and beneath, up to 6 cm long; stipules filiform, 4–8 mm long; pedicels usually solitary in the axils, 4–12 mm long; calyx 7–9 mm long, densely tomentose, plicately 10-ribbed, often with 6–9 unequal lobes; corolla orange. Fruits 6–7 mm diameter, apically puberulent; mericarps ca. 8, 3–4 mm tall, laterally reticulate, with two apical spines < 1 mm long, retrorsely pubescent; Sep–Dec.

Often with stands of grasses in riparian situations, and in the understory in Evergreen Seasonal Forest, Tropical Deciduous Forest, Short-Tree Savanna, Thorn Woodland, and Pine-Oak Forest; uncommon in the Central Depression, Sierra Madre, and Pacific Coastal Plain; 30 to 1000 m. Mex. (Oax., Chis.), Salv., Nic., C.R. Chiapas Collections: *20701*; *42230*; *47919*; *52875*; *54255*; *54442*.

5. **Sida ciliaris** L., Syst. Nat. ed. 10. 1145. 1759.

—Type: Jamaica, *Browne s.n.* (LINN—866.8, as microfiche!). Note: The type is not LINN—866.6 as stated by Borssum Waalkes (1966); see comment on the type by Clement (1957, p. 24).

Sida anomala A. St.-Hil., Fl. Bras. Merid. 1:177. 1827. *Sida ciliaris* L. var. *anomala* (A. St.-Hil.) Schumann, in Engl. and Prantl, Nat. Pflanzenfam. 3(6): 43. 1890. —Type: Uruguay, près le village de Sando, *St.-Hilaire C2/2470* (P as photograph F—35529!).

Sida anomala A. St.-Hil var. *mexicana* Moric. ex Ser., Bull. Bot. 6:175. 1830. *Sida ciliaris* L. var. *mexicana* (Moric. ex Ser.) Shinn., Field & Lab. 21:94. 1953. —Type: Mexico, near Tampico, *Berlandier 66* (G; isotypes: BM! OXF!).

Plus numerous other synonyms.

Illustrations: St.-Hilaire, Fl. Bras. Merid. *pl. 33.* 1827; Moricand, Pl. Nouv. Amér. *t.24.* 1837; Martius, Fl. Bras. 12(3): *pl. 55.* 1892; Rodrigo, Revista Mus. La Plata. Secc. Bot. n.s. 6:96, *fig. 4, pl. 3.* 1944; Krapovickas in Steyermark and Huber, Fl. Avila, *pl. 197.* 1978; Fryxell, Syst. Bot. Monogr. 25:375. *fig. 97.* 1988.

Decumbent perennial herb, freely branching, the stems with appressed stellate hairs, the hairs usually 4-armed. Leaves petiolate, mostly crowded at the apices of the branches because of marked shortening of the internodes, narrowly elliptic, few-toothed apically, acute or obtuse, 1–2 cm long, glabrous above, stellate-pubescent beneath; stipules linear to oblanceolate, ciliate, crowded, 4–12 mm long, partially adnate to petiole. Flowers and fruits subsessile, crowded among the leaves and stipules at the branch tips; calyx 4–6 mm long, half-divided, hirsute; corolla often rose, sometimes red-orange or even yellowish. Fruits conical, more or less muricate; mericarps 5–8.

Roadsides, pastures, and other disturbed sites, often in relatively arid habitats; uncommon in Central Depression and Pacific Coastal Plain [?]; 0 to 1000 m. Southern U.S., Mex. (Baja C.S., Son., Chih., Tam., Sin., Dgo., S.L.P., Nay., Jal., Qro., Cma., Mich., Méx., Mlos., Pue., Ver., Gro., Oax., Camp., Yuc., Chis.), Guat., Bel., Hond., Salv., Nic., C.R., Pan., Antill., S.A. (Col., Ven., Guy., Ecu., Peru, Bol., Braz., Arg., Parag., Urug.). Chiapas Collections: *La 1315* (DS); *Mi 5505* (MEXU); *19986*; *37382*.

6. **Sida collina** Schldl., Linnaea 11:364. 1837.

—Type: Mexico, Veracruz, prope Hacienda de la Laguna, Jul 1829, *Schiede s.n.* (HAL!).

Sida costata Schldl., Linnaea 11:365. 1837. —Type: Mexico, Veracruz, prope Hacienda de la Laguna, Jul 1829, *Schiede* [473] (HAL!; isotypes: B, as photograph F—9377! GOET! HAL!).

Sida corymbosa R. E. Fries, Bull. Herb. Boissier ser. 2. 7: 988, 1907. —Type: Mexico, Veracruz, region d'Orizaba, *Bourgeau 2863* (isotypes: G, K!).

Illustration: none found.

Subshrubs or shrubs 0.5–1.5 m tall, widely branched, the stems loosely stellate-pubescent, sometimes with reddish pigmentation. Leaves short-petiolate, elliptic or oblanceolate to broadly rhombic, basally truncate-cuneate and 3-nerved, entire in basal half, serrate in distal half, acute, somewhat discolorous, the upper surface green, with appressed simple hairs ca. 0.5 mm long, the lower surface whitish to ferrugineous, stellate-pubescent; stipules linear, usually 1-nerved, ciliate, exceeding petiole. Flowers solitary or paired in the axils, often congested apically or at tips of axillary branchlets; pedicels slender, up to 2 cm long (twice length of calyx or less); calyx 7–10 mm long, basally 10-ribbed and yellowish, stellate-pubescent, the lobes triangular and ciliate (5 mm wide); corolla orange-yellow with a maroon center, 8–10 mm long. Fruits oblate or subconical, subglabrous; mericarps 6–9, muticous, laterally reticulate, dorsally grooved, nearly indehiscent, 1-seeded; Oct–Dec.

In pastures and roadsides, in Short-Tree Savanna and Pine-Oak Forest; uncommon in the Central Depression and Sierra Madre; 800 to 1100 m. Chiapas Collections: *EM 2144* (F, K); *19801*; *46577*.

7. **Sida cordifolia** L., Sp. Pl. 684. 1753.

—Type: "cordifolia 4" (LINN—866.12, as microfiche!).

Sida althaefolia Swartz, Prodr. 101. 1788. —*Sida cordifolia* L. var. *altheifolia* (Swartz) Griseb., Fl. Brit. W. I. 76. 1859. —Type: Jamaica, *Swartz s.n.* (S!).

Plus numerous additional synonyms.

Illustration: Martius Fl. Bras. 12(3):*pl. 62*. 1892; Rodrigo, Revista Mus. La Plata, Secc. Bot. n.s. 6:186, *fig. 41*, *pl. 31*. 1944; Herter, Fl. Ilus. Uruguay, fasc. 13. *fig. 2144*. 1957; Fl. Taiwan 3:723, *pl. 786*. 1977; Fryxell, Syst. Bot. Monogr. 25:375. *fig. 97*. 1988.

Erect shrubs or subshrubs to 1.5 m tall, with ascending branches, stellate-tomentose throughout. Leaves petiolate, broadly cordate to lance-ovate, to 6 cm long but reduced upwards, serrate to the base, acute, soft-tomentose above and beneath. Flowers and fruits axillary but usually aggregated terminally into congested paniculate or corymbiform inflorescences; calyx prominently 10-ribbed, tomentose, 6–7 mm long; corolla yellow-orange. Fruit 6–7 mm diameter, apically pubescent; mericarps 8–14, each with two apical spines (variably developed, rarely suppressed) that are retrorsely pubescent; $2n = 28$.

In disturbed habitats, roadsides, and urban sites, in Evergreen Seasonal Forest, Tropical Deciduous Forest, Short-Tree Savanna, and Pine-Oak Forest; uncommon in Gulf Coastal Plain, Central Depression, Sierra Madre, and Pacific Coastal Plain; 200 to 1000 m. U.S., Mex. (Tam., Sin., Ver., Oax., Tab., Yuc., Chis.), Guat., Bel., Hond., Salv., Nic., Antill., S.A. (Col., Ven., Peru, Bol., Braz., Arg., Parag., Urug.), Afr., Asia, Australia. Chiapas Collections: *F 898* (BH, pf); *26690*; *38727*; *47237*; *52793*.

8. **Sida elliottii** Torrey & A. Gray, Fl. N. Amer. 1:231. 1838.

≡*Sida gracilis* Elliott, Sketch Bot. S. Carolina 2:159. 1822 (non L. Rich., 1792). —Type: United States, near Beaufort, S. Carolina, *Elliott s.n.* (CHARL).

Sida rubromarginata Nash, Bull. Torrey Bot. Club 23:102. 1896. —Type: United States, Tampa, Florida, 24 Aug 1895, *Nash 2472* (NY!; isotypes: F! GH! K! MASS! MO! OS! US!).

Sida leptophylla Small, Bull. Torrey Bot. Club 25:468. 1898. —Type: ex Torrey herb. *s.coll. 40* (NY!).

Illustration: New Britton and Brown Ill. Fl. 2:531. 1968.

Erect, few-stemmed subshrubs 0.5–1 m tall, the stems minutely puberulent to glabrate. Leaves short-petiolate, the juvenile leaves elliptic and 2–3 times as long as broad but mature leaves narrowly elliptic to oblong and 6–20 times as long as broad, serrate nearly to the base, often red-margined, acute, glabrous above, stellate-pubescent beneath; stipules subulate, about equaling the petioles. Pedicels solitary in the axils, 1–2.5 cm long, shorter than the leaves; calyx 5–7 mm long, sometimes ciliate on the nerves; corolla yellow-orange, 12–15 mm long. Fruit 6–8 mm diameter; mericarps 8–11, minutely puberulent, apically short-spined; May–Oct.

Of scattered occurrence on hillsides and in ravines in Evergreen Seasonal Forest, Tropical Deciduous Forest, and Short-Tree Savanna; uncommon in Northern Highlands, Central Plateau, and Central Depression; 100 to 1500 m. Southeastern U.S., Mex. (Coah., N.L., Tam., S.L.P., Qro., Hgo., Ver., Chis.), Guat. Chiapas Collections: *N 2969* (US); *25682*; *38274*; *54919*.

9. **Sida glabra** Miller, Gard. Dict. ed. 8. no. 14. 1768 (non Nutt., 1834).

—Type: *Houstoun s.n.* (BM, as photo BH—5077!).

Sida glutinosa Cav., Diss. 1:16, *t.2.f.8*. 1785. —Lectotype: Mauritius, *Commerson s.n.* (P—JU no. 12278A, as microfiche!).

Sida insperata Standley & L. O. Williams, Ceiba 3:51. 1952. —Type: Honduras, Dept. Morazón, vic. of El Zamorano, 16 Nov 1949, *Standley 24639* (US!).

Plus numerous other synonyms.

Illustration: Cavanilles, loc. cit.; Fryxell, Syst. Bot. Monogr. 25:375. *fig. 97*. 1988.

Weak-stemmed herbs or subshrubs to 2 m tall, erect or more often reclining or scandent, the stems viscid. Leaves petiolate, ovate-cordate, dentate to the base, acute or acuminate, more or less stellate-pubescent above and beneath; stipules inconspicuous. Pedicels viscid, several times as long as the calyx, sometimes solitary in the axils but usually aggregated terminally in many-flowered, open, more or less paniculate inflorescences; calyx 4–5.5 mm long, viscid, the lobes trullate, the margins dark green; corolla white or yellow-orange, slightly exceeding the calyx. Fruit pyramidal, 3–3.5 mm diameter; mericarps 5, apically 2-spined, the spines 1–2 mm long, antrorsely pubescent; $2n = 16$.

Along streams, sometimes in disturbed habitats, in Tropical Deciduous Forest and Short-Tree Savanna; common in Central Depression and Pacific Coastal Plain; 200 to 900 m. Mex. (Baja C.S., Son., Chih., N.L., Tam., Sin., Dgo., Zac., S.L.P., Nay., Jal., Qro., Cma., Mich., Méx., D.F., Mlos., Pue., Ver., Oax., Tab., Camp., Yuc., Q.Roo, Chis.), Guat., Bel., Hond., Salv., Nic., C.R., Pan., Antill., S.A. (Col., Ven., Bol., Braz.), Asia. Chiapas Collections: *F 3269* (BM, CHAPA, CTES, DS, ENCB, MEXU, MO, pf); *F 3372* (BM, CHAPA, DS, ENCB, MEXU, MO, pf); *Me 2198* (US); *20021*; *23803*; *42225*; *42318*; *54044*; *54234*; *54440*; *54808*.

10. **Sida haenkeana** K. Presl, Reliq. Haenk. 2: 104. 1835.

—Type: Mexico, in parte occidentali, *Haenke s.n.* (PR!; isotypes: MO! PR—2!).

Sida woronowii Ulbr., Notizbl. Bot. Gart. Berlin-Dahlem 11: 536. 1932. —Type: Mexico, Michoacán, prope Uruapan, *Woronow 2890* (B; isotype: LE!).

Illustration: **Fig. 26.**

Subshrubs or shrubs 0.5–1 m tall, erect, with ascending branches, the stems minutely stellate-puberulent and also with few to many simple hairs 0.5–1 mm long. Leaves short-petiolate, lance-ovate to rhombic, crenate or serrate at least distally, acute, up to 7 cm long, sparsely to densely hirsute beneath especially on veins, the hairs simple, 0.5–1 mm long, antrorsely appressed-hirsute or glabrate above. Pedicels solitary in the axils or in few-flowered axillary clusters, scattered along the stem but often crowded apically, 2–3 times as long as the calyx near apex to 6–8 times as long as calyx below; calyx 6–7 mm long, plicately 10-ribbed, the ribs often sparsely hirsute; corolla yellow-orange, 8–10 mm long. Fruits 6–7 mm diameter, oblate; mericarps 8–10, muticous, ca. 2.5 mm high.

Grassy slopes and stream banks, occasionally weedy in Evergreen Cloud Forest, Tropical Deciduous Forest, Pine-Oak-Liquidambar Forest, and Pine-Oak Forest; common in Northern Highlands, Eastern Highlands, and Central Plateau; 1500 to 2000(–2800) m. Mex. (Jal., Mich., Méx., D.F., Mlos., Pue., Ver., Gro., Oax., Chis.), Guat., C.R., Pan. Chiapas Collections: *Cro 65194* (MO, pf); *La 105* (DS); *La 1355* (DS); *La 1468* (DS); *La 1736* (DS); *La 1899* (DS, LL); *La 2049* (DS); *La 2083* (DS); *La 2190* (DS); *La 2365* (DS); *La 2488* (DS); *T&L 41058* (DS); *T 11* (DS); *T 1242* (DS, LL, WIS); *T 1534* (DS, LL); *T 1535* (DS, WIS); *T 1721* (DS, WIS); *T 1904* (DS, WIS); *T 1922* (DS, WIS); *T 4550* (MEXU, pf); *T 4757* (MEXU, pf); *T 5355* (MEXU, pf); *6915*; *10763*; *11230*; *11895*; *12180*; *12362*; *12631*; *12637*; *12829*; *14599*; *33996*; *34922*; *53917*; *56835*.

11. **Sida jamaicensis** L., Syst. Nat. ed. 10. 1145. 1759 (non Miller, 1768, nec Vell., 1825, nec D. Dietr., 1847).

—Type: "Jamaicensis" (LINN—866.10, as microfiche!).

Sida mollis L. Rich., Actes Soc. Hist. Nat. Paris 1:111. 1792. —Type: not stated, presumably at P.

Sida hermannioides Kunth in H.B.K., Nov. Gen. Sp. 5:258 [folio ed. p. 200]. 1822. —Type: Nov. Granat. prope Honda, *Humboldt and Bonpland s.n.* (P—HBK, as photograph F—35538!).

Sida tristis Schldl., Linnaea 3:271. 1828. —Type: West Indies, St. Thomas, *Ehrenberg s.n.* (B? HAL?).

Illustration: none found.

Subshrubs 0.5–1 m tall, softly stellate-pubescent throughout, with distichous branching pattern and leaf arrangement. Leaves short-petiolate, broadly ovate-elliptic, serrate-crenate, acute or obtuse, soft-pubescent above and beneath, somewhat discolorous. Pedicels shorter than the petioles, one or more in the leaf axils; calyx 6–7 mm long, the lobes acuminate, ciliate; corolla white. Fruit apically pubescent; mericarps 5, blackish at maturity, 2-spined.

On roadsides and in pastures and disturbed habitats in Short-Tree Savanna; rare in Central Depression and Pacific Coastal Plain; 0 to 800 m. Mex. (Jal., Cma., Mich., Méx., Ver., Gro., Oax., Chis.), Hond., Nic., C.R., Pan., Antill., S.A. (Col., Ven.). Chiapas Collections: *F 3251* (CHAPA, MEXU, pf); *54232*.

12. **Sida jussieana** DC., Prodr. 1:463. 1824.

—Type: Peru, *J. de Jussieu s.n.* (P—JU no. 12267 p.p., as microfiche!).

Sida decumbens A. St.-Hil. & Naudin, Ann. Sci. Nat. Bot. sér. 2. 18:52. 1842. —*Anoda decumbens* (A. St.-Hil. & Naudin) Hochr., Annuaire Conserv. Jard. Bot. Genève 20: 56. 1916. —Type: Brazil, Minas Geraes, prope Congonhas, *Vauthier 21* (P as photograph F—35535!).

Sida stolonifera Salzm. ex Turcz., Bull. Soc. Imp. Naturalistes Moscou 31:199. 1858. —*Physaliastrum stoloniferum* (Salzm. ex Turcz.) Monteiro, Anais XX Congr. Nac. Bot., Soc. Bot. Brasil 402. 1969. —Type: Brazil, Bahia, *Salzmann s.n.* (KW!; isotypes: K! MO! P).

Sida begonioides Griseb., Bonplandia 6:3. 1858. —Type: Panama, *Duchassaing s.n.* (GOET!).

Illustrations: Rodrigo, Revista Mus. La Plata. Secc. Bot. n.s. 6:116, *fig. 12, pl. 11.* 1944.

Repent herbs, the stems with patent simple hairs 1–2 mm long. Leaves petiolate, distichous, cordate-ovate, markedly asymmetrical, crenate, acuminate, appressed-hirsute above and beneath, the hairs simple. Pedicels axillary, solitary, slender, 2–4 times length of subtending petiole; calyx 5–7 mm long, markedly pentangular, becoming inflated and pyramidal in fruit, setose; corolla pale yellow, sometimes with faint red center, barely exceeding calyx; androecium included, glabrous, the anthers yellow; styles and stigmas 5, purple. Fruits enclosed in calyx, 3 mm diameter, subglobose, glabrous; mericarps 5, muticous; $2n = 16$; Oct–Jan.

Roadsides, fencerows, pastures, and disturbed areas in moist situations in Tropical Deciduous Forest; rare in Pacific Coastal Plain; 100 to 1000 m. Mex. (Ver., Gro., Oax., Chis.), Guat., Hond., Salv., Nic., C.R., Pan., S.A. (Bol., Braz., Arg., Parag.). Chiapas Collections: *F 3219* (DS, pf); *F 3312* (BM, CHAPA, CTES, DS, ENCB, F, MEXU, MO, WIS, pf); *EM 98* (MO).

13. **Sida linifolia** Cav., Diss. 1:14, *t.2.f.1.* 1785.

—Type: in insula Caienae & in Peru, *J. de Jussieu s.n.* (P—JU no. 12243A, as microfiche!).

Sida longifolia Brandegee, Zoe 5:212. 1905. —Type: Mexico, Sinaloa, Culiacán, Cerro Colorado, 3 Nov 1904, *Brandegee s.n.* (UC!).

Plus several other synonyms.

Illustrations: Martius Fl. Bras. 12(3): *pl. 57.* 1892; Rodrigo, Revista Mus. La Plata, Secc. Bot. n.s. 6:118, *fig. 13, pl. 12.* 1944; Krapovickas in Steyermark and Huber, Fl. Avila, *pl. 197.* 1978; Fryxell, Syst. Bot. Monogr. 25:375. *fig. 97.* 1988.

Erect to ascending subshrubs to 1 m tall, the stems more or less hirsute. Leaves short-petiolate, narrowly lanceolate to linear (up to 20 times as long as broad), entire, acute, hirsute with simple hairs 1–2.5 mm long. Flowers and fruits in terminal corymbiform inflorescences above the foliage; pedicels 0.5–1 cm long; calyx 5–6 mm long, hirsute; corolla white with dark red center, 7–9 mm long. Fruits oblate, 4–5 mm diameter, glabrous; mericarps 7–8, muticous; $2n = 14$.

In grassy and other open areas in Montane Rain Forest, Evergreen Seasonal Forest, Tropical Deciduous Forest, Pine-Oak Forest, and Short-Tree Savanna; common in Gulf Coastal Plain, Northern Highlands, Central Plateau, Central Depression, and Sierra Madre; 100 to 1500 m. Mex. (Son., Tam., Sin., Nay., Jal., Mich., Méx., Ver., Gro., Oax., Tab., Camp., Chis.), Guat., Bel., Hond., Salv., Nic., C.R., Pan., Antill., S.A. (Ven., Guy., Peru, Bol., Braz.), Afr., Pac. Basin. Chiapas Collections: *EM 3777* (F, MO); *27114*; *37757*; *38657*; *46834*; *52616*; *54356*; *54441*; *54945*; *55273*.

14. **Sida rhombifolia** L., Sp. Pl. 684. 1753.

—*Malva rhombifolia* (L.) Krause in Sturm, Deutschl. Fl. ed. 2. 6:238. 1901. —Type: "2 rhombifolia" (LINN—866.3, as microfiche!; isotype: S, as microfiche!).

Sida rhomboidea Roxb. ex Fleming, Asiat. Res. 11:178. 1810; Hort. Beng. 501. 1813. —*Sida rhombifolia* L. var. *rhomboidea* (Roxb. ex Fleming) Masters in J. D. Hook., Fl. Brit. India 1:323. 1874. —Lectotype (Borssum Waalkes, Blumea 14:196. 1966): s.loc. *s.coll. n.2228* (BR!).

Sida hondensis Kunth in H.B.K., Nov. Gen. Sp. 5:261 [folio ed. p. 203]. 1822. —Type: Novo-Granatensis, prope Honda, *Humboldt and Bonpland 1709* (P—HBK as microfiche!).

Sida ruderata Macfad., Fl. Jamaica 1:81. 1837. —Type: Jamaica (specimen unknown).

Illustrations: Martius, Fl. Bras. 12(3): *pl. 63.* 1892; New Britton and Brown Ill. Fl. 2:531. 1968; Radford et al., Man. Vasc. Fl. Carolina 703. 1962; Rodrigo, Revista Mus. La Plata. Secc. Bot n.s. 6:174, *fig. 38, pl. 28.* 1944; Herter, Fl. Ilus. Uruguay, fasc. 13. *fig. 2146.* 1957; Fawcett and Rendle, Fl. Jamaica 5:118, *fig. 46.* 1926; Fryxell, Syst. Bot. Monogr. 25:375. *fig. 97.* 1988.

Erect subshrubs ca. 1 m tall with ascending branches, the stems minutely stellate-puberulent, appearing farinaceous, the hairs <0.1 mm long. Leaves short-petiolate, more or less rhomboid, serrate distally, acute to obtuse (rarely retuse), minutely stellate-puberulent above and beneath, sometimes glabrescent above, sometimes appearing farinaceous beneath, more or less discolorous. Pedicels solitary in the axils, mostly scattered along stems, slender, 1–3 cm long; calyx 5–6 mm long, 10-ribbed at the base, minutely puberulent; corolla yellow or yellow-orange, 7–9 mm long. Fruits 4–5 mm diameter, glabrous, oblate to conical; mericarps 10–14, muticous to apically 2-spined, the spine sometimes single through failure of dehiscence; $2n = 14, 28$.

A common weed on roadsides, in disturbed ground, pastures, along streams, in Lower Montane Rain Forest, Evergreen Seasonal Forest, Tropical Deciduous Forest, Pine-Oak-Liquidambar Forest, Pine-Oak Forest, and Coastal Strand, and Lowland Riparian Forest; common in Gulf Coastal Plain, Northern Highlands, Eastern Highlands, Central Plateau, Central Depression, and Pacific Coastal Plain; 0 to 1500 m. U.S., Mex. (Baja C., Baja C.S., Son., Chih., N.L., Tam., Sin., Dgo., Zac., S.L.P., Nay., Jal., Gto., Qro., Hgo., Cma., Mich., Méx., D.F., Mlos., Pue., Ver., Gro., Oax., Tab., Chis.), Guat., Bel., Hond., Salv., Nic., C.R., Pan., Antill., S.A. (Col., Ven., Fr. Guin., Ecu., Peru, Bol., Braz., Arg., Parag., Urug.), Eur., Afr., Asia, Pac. Basin, Australia. Chiapas Collections: *Cz 3255* (XAL, pf); *Cz&Av 4020* (XAL, pf); *Cro 47487* (MO); *F 890* (BH, pf); *Ha 15797* (OSH, pf); *La 2301* (DS); *Mz 7171* (MEXU, pf); *Mz 7855* (MEXU, pf); *Mz 8239* (MEXU, pf); *Mz 11295* (MEXU, pf); *Mz 13915* (MEXU, pf); *EM 96* (MO); *N 3322* (US); *T 2037* (DS, F, LL); *Va 213* (MO); *6095*; *8849*; *10404*; *11065*; *13621*; *14600*; *14884*; *19909*; *20001*; *20894*; *35335*; *36767*; *40560*; *42471*; *48178*.

15. **Sida rzedowskii** Fryx., Sida 8:125. 1979.

—Type: Mexico, Hidalgo, Cerro Ventoso, entre Pachuca y Real del Monte, 29 Aug 1965, *Rzedowski 20560* (ENCB!).

Illustration: none found.

Perennial herb <0.5 m tall, the stems branched and suberect, minutely stellate-pubescent. Leaves petiolate, elliptic or oblong, 1–3 cm long, dentate, subacute or obtuse, more or less stellate-pubescent above and beneath. Pedicels 1–10 mm long, solitary in the axils but apically crowded because of abrupt shortening of apical internodes; calyx 4–6 mm long, stellate-pubescent, 10-ribbed, sometimes ciliate on ribs; corolla 6–8 mm long, rose to red-purple but yellowish in center; androecium included, the anthers yellow. Fruits oblate, 5–6 mm diameter, minutely stellate-pubescent apically; mericarps 8–11, acute or rounded apically; Jun–Oct.

Dry hillsides and roadsides in Shrub Associations; rare in Central Plateau; 2000 to 2800 m. Mex. (S.L.P., Jal., Gto., Qro., Hgo., Méx., D.F., Pue., Chis.). Chiapas Collections: *Go 913* (US); *6001*.

16. **Sida salviifolia** K. Presl, Reliq. Haenk. 2: 110. 1835.

—*Sida spinosa* L. var. *salviifolia* (K. Presl) E. G. Baker, J. Bot. 30:237. 1892. —Type: in Mexico prope Acapulco, *Haenke s.n.* (PR!; isotype: BM!).

Sida erecta Macfad., Fl. Jamaica 1:80. 1837. —Lectotype (Fryxell, Sida 11:79. 1985): Jamaica, near Half-Way Tree (K!).

Sida angustissima A. St.-Hil. var. *moritziana* Schumann, Martius Fl. Bras. 12(3):336. 1891. —Type: Novo-Granatensis, prope Maracaybo, *Moritz s.n.* (specimen unknown).

Sida holwayi E. G. Baker ex Rose, Contr. U.S. Natl. Herb. 5:176. 1899. —Type: Mexico, Morelos, Cuautla, 12 Oct 1898, *Holway 3043* (US!; isotypes: BM! GH!).

Illustration: none found.

Subshrubs 0.5–1 m tall with ascending branches, the stems stellate-tomentose. Leaves petiolate, lanceolate to elliptic, serrate to the base, acute to obtuse, softly stellate-tomentose above and beneath; stipules filiform, pubescent. Pedicels solitary in the axils, 2–7 mm long, the flowers and fruits often congested at the apices of the branches; calyx 5–6 mm long, 5-lobed, stellate-tomentose; corolla white to yellow-orange, sometimes with a reddish center. Fruit 4–5 mm diameter; mericarps 5–8, apically 2-spined, the spines 1.7–3 mm long, retrorsely pubescent.

Roadsides and disturbed areas, in Tropical Deciduous Forest; rare in Sierra Madre; 1000 to 1300 m. Mex. (Sin., Nay., Jal., Cma., Mlos., Pue., Gro., Oax., Chis.), Nic., Antill., S.A. (Ven., Col., Ecu.). Chiapas Collections: *40533*, *70345*.

17. **Sida spinosa** L., Sp. Pl. 683. 1753.

—Type: "spinosa" (LINN—866.1, as microfiche!; isotype: S, as microfiche!). A photograph of the holotype is reproduced by Rodrigo 1944, *pl. 13* (cited below).

Sida angustifolia Miller, Gard. Dict. ed. 8. no. 3. 1768. —Type: in cult., *Miller s.n.* (BM!).

Plus numerous other synonyms.

Illustrations: A. Gray, Gen. Amer. Bor. *pl. 123.* 1849; Rodrigo, Revista Mus. La Plata, Secc. Bot. n.s. 6:125, *fig. 16, pl. 13.* 1944; Herter, Fl. Ilus. Uruguay, fasc. 13. *fig. 2141, 2143.* 1957; New Britton and Brown Illus. Fl. 2: 531. 1968; Krapovickas in Steyermark and Huber, Fl. Avila, *pl. 197.* 1978; Fryxell, Syst. Bot. Monogr. 25:375. *fig. 97.* 1988.

Shrubs to 1 m tall (rarely to 2 m), erect, with ascending branches, the stems minutely stellate-pubescent. Leaves petiolate (rarely spinose at base of petiole), broadly ovate, lanceolate, or narrowly oblong, up to 5 cm long, often smaller, serrate to the base, sometimes red-margined, usually acute, glabrate above, minutely stellate-tomentose beneath, discolorous. Pedicels solitary or in small groups in the leaf axils, up to 1 cm long, the flowers and fruits scattered along the stem and crowded at the apices; calyx 5–7 mm long, minutely tomentose, the lobes triangular, sometimes red-margined; corolla yellow or yellow-orange (sometimes white). Fruits 4–5 mm diameter; mericarps 5, apically 2-spined, the spines ca. 1 mm long, antrorsely pubescent; $2n = 14$.

In open grassy areas, on roadsides, and in disturbed sites, frequently weedy, in Evergreen Seasonal Forest, Tropical Deciduous Forest, and Pine-Oak Forest; common in Eastern Highlands, Central Plateau, Central Depression, and Sierra Madre; 800 to 1600 m. U.S., Mex. (Son., Coah., N.L., Tam., S.L.P., Qro., Hgo., Mlos., Pue., Ver., Gro., Oax., Yuc., Chis.), Hond., Salv., Nic., C.R., Pan., Antill., S.A. (Col., Ven., Ecu., Peru, Bol., Braz., Arg., Parag., Urug.), Eur., Afr., Asia, Pac. Basin, Australia. CHIAPAS COLLECTIONS: *Cro 40622* (MO); *T 4551* (MEXU, pf); *7449*; *7655*; *10631*; *19814*; *20016*; *26222*; *36564*; *37386*; *39697*; *42259*; *42360*; *53817*; *54643*.

18. **Sida urens** L., Syst. Nat. ed. 10. 1145. 1759.

—TYPE: Jamaica, *Browne* (LINN—866.20, as microfiche!). A photograph of the type is reproduced by Rodrigo (1944, *pl. 17*).

Sida verticillata Cav., Diss. 1:13, *t.1.f.12.* 1785. —TYPE: Brasil, Rio de Janeiro, *Commerson s.n.* (P—JU no. 12275, as microfiche!; isotype: MA, as photograph F—29796!).

Sida rufescens A. St.-Hil., Fl. Bras. Merid. 1:185. 1827. *Sida urens* L. var. *rufescens* (A. St.-Hil.) E. G. Baker, J. Bot. 30: 294. 1892. —TYPE: Brazil, Minas Geraes, prope Formigas, *St.-Hilaire s.n.* (P; isotype: US!).

Plus numerous other synonyms.

ILLUSTRATIONS: Martius, Fl. Bras. 12(3): *pl. 60.* 1892; Rodrigo, Revista Mus. La Plata, Secc. Bot. n.s. 6:143, *fig. 24, pl. 17.* 1944.

Erect or reclining subshrubs, sometimes scandent, the stems 1–1.5 m long, usually with simple hairs 2–3 mm long together with shorter stellate hairs, sometimes with only stellate hairs. Leaves petiolate, cordate, ovate, crenate-serrate, acuminate, up to 9 cm long, 1.5–2 times as long as broad, more or less stellate-pubescent beneath, stellate-pubescent or with simple hairs above, the hairs often antrorsely oriented. Flowers and fruits sessile or short-pedicellate, crowded in axillary glomerules or in pedunculate axillary "heads," the individual pedicels shorter than the calyces; calyx 5–8 mm long, setose, the lobes trullate, the margins dark green; corolla orange (fading rose), often with dark red center. Fruits glabrous, 3.5–4 mm diameter; mericarps 5, muticous, essentially indehiscent; $2n = 32$.

On roadsides and in open areas in Montane Rain Forest, Evergreen Seasonal Forest, Tropical Deciduous Forest, Short-Tree Savanna, and Thorn Woodland; common in Northern Highlands, Eastern Highlands, Central Depression, and Sierra Madre; 0 to 1200 m. Mex. (Nay., Jal., Ver., Oax., Tab., Yuc., Chis.), Bel., Hond., Salv., Nic., C.R., Pan., Antill., S.A. (Col., Ven., Guy., Ecu., Peru, Bol., Arg., Parag.), Afr. CHIAPAS COLLECTIONS: *F 3234* (CHAPA, DS, ENCB, MEXU, pf); *9164*; *23843*; *30700*; *41184*; *41476*; *42369*; *42444*; *49256*; *54529*; *55446*; *56281*.

19. **Sida viarum** A. St.-Hil., Fl. Bras. Merid. 1: 182. 1827.

—TYPE: Brazil, Minas Geraes, Comarca do Rio das Mortes, *St.-Hilaire s.n.* (P).

ILLUSTRATION: Rodrigo, Revista Mus. La Plata, Secc. Bot. n.s. 6:133, *fig. 20.* 1944.

Subshrubs 0.5–1 m tall, the stems loosely stellate-pubescent. Leaves very short-petiolate, lanceolate to oblanceolate or subrhomboid, basally truncate-cuneate and entire, distally serrate, acute, markedly discolorous, the upper surface green, with appressed simple hairs ca. 1 mm long, the lower surface whitish, densely and minutely stellate-tomentose; stipules falcate, commonly 3-nerved, ciliate, exceeding petiole. Flowers and fruits in axillary clusters of 1–4, usually shorter than the subtending leaves; pedicels slender, to 1.5 cm long (the flowers often subsessile); calyx 5–7 mm long, basally 10-ribbed, the lobes 2–3 mm wide, ciliate, acuminate, sometimes red-margined; petals white or pale yellow with red spot at base, ca. 8 mm long, glabrous except sparsely ciliate on claw; androecium included, pallid, glabrous. Fruits oblate or subconical, glabrous; mericarps 5, laterally reticulate.

Evergreen Seasonal Forest and Tropical Deciduous Forest; rare in Sierra Madre and Central Depression; 700 to 900 m. Mex. (Chis.), Salv., Nic., Pan., S.A. (Ven., Bol., Braz., Arg., Parag.). CHIAPAS COLLECTIONS: *F 3314* (CHAPA, MEXU, pf); *54443*.

32. SIDASTRUM

Sidastrum E. G. Baker, J. Bot. 30:137. 1892. —TYPE: *Sidastrum quinquenervium* (Duchass. ex Triana & Planchon) E. G. Baker.

Shrubs or subshrubs, stellate-pubescent to glabrate. Leaves lanceolate to ovate, cuneate, truncate, or cordate, crenate, serrate, or subentire, acute, pubescent or glabrate. Flowers in axillary fascicles or spikes or in terminal racemes or panicles; involucel absent; calyx small, basally rounded, ecostulate, ca. half-divided; petals yellow, orangish, or purple, barely exceeding calyx to twice as long; androecium ca. equaling petals, the anthers few, sometimes only 10; styles 5–10, the stigmas capitate. Fruits often stellate-pubescent, oblate or subconical; mericarps 5–10, 1-seeded, essentially indehiscent, slightly reticulate laterally; seeds solitary; $x = 16$.

Sidastrum is a genus of seven American species, probably with additional species outside of the Americas to be added to the genus.

REFERENCE: FRYXELL, P. A. 1978. Neotropical segregates from *Sida* L. (Malvaceae). Brittonia 30:447–462.

1. **Sidastrum paniculatum** (L.) Fryx., Brittonia 30:453. 1978.

—*Sida paniculata* L., Syst. Nat. ed. 10. 1145. 1759. —Type: "paniculata" (LINN—866.17, as microfiche!).

Sida capillaris Cav., Diss. 1:10, *t.1.f.7.* 1785. —Type: Brazil, *Commerson s.n.* (P—JU no. 12269, as microfiche!).

Sida atrosanguinea Jacq., Icon. Pl. Rar. 1:136. 1787. Type: unknown.

Sida floribunda Kunth in H.B.K., Nov. Gen. Sp. 5:258 [folio ed. p. 201], *t.473.* 1822. —Type: prope Ibague, Novo-Granatensium, *Humboldt and Bonpland 2033* (P—HBK as microfiche!; isotype: B—herb. Willdenow no. 12711, as photograph F—9801!).

Illustrations: **Fig. 27**; H.B.K., Nov. Gen. Sp. 5:*pl. 473.* 1822; Martius, Fl. Bras. 12(3): *pl. 58.* 1892; Rodrigo, Revista Mus. La Plata, Secc. Bot. n.s. 6:120, *fig. 14.* 1944.

Shrubs 1–3 m tall, roughly stellate-pubescent, the hairs slightly ferrugineous. Leaves petiolate, ovate or lanceolate, truncate or subcordate, dentate, acute, stellate-pubescent above and beneath, slightly discolorous. Inflorescence a prolific terminal panicle with capillary pedicels; calyx 2–3 mm long, ca. half-divided, stellate-pubescent; petals purple, 3 mm long, reflexed; staminal column purple, pubescent, 2.5 mm long; anthers 10–20, pallid; styles 5, pallid. Fruit oblate to subconical, 4–5 mm diameter, minutely pubescent; mericarps 5, 2.5 mm long, 1-seeded; seeds glabrous; $2n = 32$; Nov–Mar.

Commonly growing in shade, in Montane Rain Forest, Seasonal Evergreen Forest, and Pine-Oak-Liquidambar Forest; uncommon in Northern Highlands; 600 to 900 m. U.S., Mex. (Tam., S.L.P., Pue., Ver., Oax., Tab., Chis.), Guat., Bel., Hond., Pan., Antill., S.A. (Ecu., Peru, Braz., Parag.), Pac. Basin. Chiapas Collections: *23842*; *50522*.

33. URENA

Urena L., Sp. Pl. 692. 1753; Gen. Pl. ed. 5. 309. 1754. —Lectotype (Hochreutiner, 1901): *Urena lobata* L.

Widely branched spreading shrubs, minutely stellate-pubescent. Leaves petiolate, lanceolate, ovate, to subreniform, cordate or truncate, angled or deeply parted, serrate-crenate or subentire, acute or obtuse, manifestly discolorous, with 1–3 prominent nectaries at base of principal veins beneath. Flowers solitary in the axils, short-pedicellate; involucel basally gamophyllous, 5-parted, the lobes alternate with those of the calyx; calyx pentamerous, ca. half-divided; petals lavender; androecium included, the anthers subsessile, often purplish. Fruit schizocarpic, more or less 5-lobed, stellate-pubescent and sometimes armed with numerous glochidiate protuberances; mericarps 5, indehiscent; seeds solitary, glabrous; $x = 7$.

Urena is a pantropical genus of about six species, commonly weedy, sometimes occurring adventively (e.g. on ballast) in temperate zones.

References: Gürke, M. 1892. Beiträge zur Systematik der Malvaceen. II. Die Gattung *Urena.* Bot. Jahrb. Syst. 16:361–385; Hochreutiner, B. P. G. 1901. Le genre *Urena* L. Annuaire Conserv. Jard. Bot. Genève 5:131–146.

a. Leaves ovate, angulate, or shallowly lobed; calyx 5–9 mm long; petals 18–20 mm long .... 1. *U. lobata*
aa. Leaves palmately parted, the sinuses broadly rounded; calyx 4–5 mm long; petals 12–18 mm long .... 2. *U. sinuata*

1. **Urena lobata** L., Sp. Pl. 692. 1753.

—Type: "lobata 1" (LINN—873.1, as microfiche!; isotype: S, as microfiche!).

Illustrations: Curtis Bot. Mag. 58:*t.3043.* 1831; Fawcett and Rendle, Fl. Jamaica 5:127, *fig. 49.* 1926; Fl. Taiwan 3:727, *pl. 788.* 1977; Fryxell, Syst. Bot. Monogr. 25:444. *fig. 111.* 1988.

Subshrubs ca. 1 m tall, the stems minutely pubescent. Leaves petiolate, broadly to narrowly ovate, angulate to weakly lobulate, basally truncate to cordate, crenate, more or less acute, slightly discolorous, minutely stellate-pubescent, with one (rarely more) prominent bordered nectary at base of midrib beneath. Flowers one or a few in the leaf axils, subsessile to short-pedicellate (up to 7 mm long); involucel gamophyllous, 5-lobed, 5–6 mm long, subequal to calyx; calyx pubescent, ca. half-divided, the lobes ciliate, 1-ribbed; petals lavender, ca. 15 mm long, externally pubescent; staminal column glabrous, the anthers subsessile. Fruits ca. 8 mm diameter, oblate, stellate-pubescent and with numerous glochidiate spines; mericarps 5, indehiscent; seeds solitary, 3–3.5 mm long, glabrous; $2n = 28$, 56.

In Montane Rain Forest; rare in Northern Highlands; 600 m. U.S., Mex. (Jal., Ver., Chis.), Bel., Hond., Nic., Pan., Antill., S.A. (Col., Ven., Ecu., Peru, Bol., Braz., Arg., Parag.), Afr., Asia, Pac. Basin, Australia. Chiapas Collection: *50573*.

2. **Urena sinuata** L., Sp. Pl. 692. 1753.

—Lectotype: Ceylon, herb. Hermann, vol. 4, fol. 34, *Linn. no. 257* (BM).

Illustration: Robyns, Ann. Missouri Bot. Gard. 52:523, *fig. 5.* 1965; Fryxell, Syst. Bot. Monogr. 25:444, *fig. 111.* 1988; Fl. Lesser Antilles 5:257. *fig. 98.* 1989.

Shrubs or subshrubs to 1 m tall, branching widely, minutely stellate-pubescent. Leaves petiolate, cordate or truncate, deeply 3–7-lobed, the lobes basally constricted, sometimes secondarily lobed, the sinuses open and often broadly rounded, denticulate, acute or obtuse, stellate-pubescent, manifestly discolorous, with one or more prominent nectaries at base of main veins beneath. Flowers solitary in the axils, subsessile or short-pedicellate; involucel gamophyllous, 5-lobed, ca. 5 mm long; calyx ca. half-divided, 4–5 mm long; petals lavender, 12–18 mm long. Fruit a 5-lobed schizocarp ca. 1 cm diameter, with numerous glochidiate protuberances; mericarps 5, indehiscent; seeds solitary, ca. 3 mm long, glabrous; $2n = 28$.

Roadsides and disturbed ground; rare on Pacific Coastal Plain; 0 to 700 m. Mex. (Ver., Gro., Chis.), Pan., S.A. (Col., Ven.), Asia. Chiapas Collection: *EM 17087* (F, MEXU).

34. UROCARPIDIUM

Urocarpidium Ulbr., Bot. Jahrb. Syst. 54 (Beibl. 117):63. 1916. —Type: *Urocarpidium albiflorum* Ulbr.

Annual or perennial herbs, ascending or erect, with stellate pubescence. Leaves ovate or orbicular, frequently lobed or parted, crenate or dentate. Flowers sometimes solitary, usually in axillary cymes; involucel of 3 filiform bracts; calyx 5-lobed; corolla purple (sometimes white), shorter to slightly longer than calyx; androecium included, the column glabrous or pubescent, the anthers sometimes purple, few (sometimes only 5); stigmas capitate. Fruits schizocarpic, oblate, glabrous; mericarps 5–15, indehiscent, horseshoe-shaped, 1-seeded, sometimes with a small endoglossum; seeds glabrous; $x = 5$.

Urocarpidium is a genus of 15 species from eastern South America (Chile and Argentina to Venezuela) that is also found disjunctly in Guatemala and Mexico at relatively high elevations for the family. Two species occur in Mexico, one of them in Chiapas.

Reference: Krapovickas, A. 1970. Malváceas nuevas sudamericanas. Bonplandia 3(6):63–72. [includes key to species of *Urocarpidium*]

1. **Urocarpidium jacens** (S. Watson) Krapov., Darwiniana 10:627. 1954.

—*Malvastrum jacens* S. Watson, Proc. Amer. Acad. Arts 21:417. 1886. —Type: Mexico, Chihuahua, Norogachic, Aug–Nov 1885, *Palmer 430* (GH!; isotypes: K! US!).

Malvastrum jacens (S. Watson) Krapov. var. *palmatifidum* Hochr., Annuaire Conserv. Jard. Bot. Genève 6:32. 1902. —*Urocarpidium palmatifidum* (Hochr.) Krapov., Darwiniana 10:623. 1954. —Type: Mexico, Chihuahua, in Sierra Madre, 2 Oct 1888, *Pringle 1574* (isotypes: BM! BR! UC!).

Illustration: **Fig. 28**; Fryxell, Syst. Bot. Monogr. 25:448. *fig. 113*. 1988.

Herbs to 1 m tall, ascending or erect, with stellate pubescence. Leaves petiolate, ovate, simple, or lobed (sometimes dissected), dentate, 2–5 cm long. Inflorescence axillary, shorter than the subtending petiole, usually with fewer than 6 flowers; flowers subsessile; involucellar bractlets filiform, shorter than the calyx; calyx 5–6 mm long with hairs 1–2 mm long; corolla purplish, about equaling the calyx. Fruits oblate, glabrous, 4 mm diameter; mericarps 7–10, slightly less than 2 mm long, rugulose; seeds glabrous; Sep–Nov.

Grassy areas in Pine-Oak Forest; rare in Central Plateau; 2250 m and higher. Mex. (Chih., Dgo., Zac., Aguasc., Hgo., Méx., D.F., Pue., Ver., Chis.), Guat. Chiapas Collection: *54714*.

35. WISSADULA

Wissadula Medikus, Malvenfam. 24. 1787. —Type: *Wissadula zeylanica* Medikus [≡ *Wissadula periplocifolia* (L.) K. Presl ex Thwaites].

Subshrubs, usually unbranched below the inflorescence, stellate-pubescent. Leaves petiolate, ovate, lanceolate, or triangular, cordate or truncate, entire or dentate, acute or acuminate, often discolorous. Inflorescence usually leafless, widely branched terminal panicles or terminal racemes, the flowers sometimes solitary in the axils of the leaves; involucel absent; calyx small, 5-lobed; corolla yellowish or whitish, usually small. Fruit a pseudocapsular schizocarp; mericarps 3–6, usually rostrate, 2-celled by a constriction, the lower cell indehiscent, 1-seeded, the upper cell dehiscent, with 2 collateral seeds (these rarely suppressed); seeds pubescent (the lower seed often more so than the upper two); $x = 7$.

The generic boundaries within the generic alliance including *Wissadula* have recently undergone significant revision (Bates, D. M., Gentes Herb. 11:311–328; 329–354. 1978), as a result of which *Wissadula* sens. str. will probably become a genus of perhaps 25 species, most of which are South American. Four species occur in Mexico, all of them in Chiapas.

Reference: Fries, R. E. 1908. Entwurf einer Monographie der Gattungen *Wissadula* und *Pseudabutilon*. Kongl. Svenska Vetenskapsakad. Handl. 43 (4):1–114 + 10 plates.

a. Leaves truncate, more or less elliptic, broadest above the base; herbage ferrugineous-tomentose .... 3. *W. excelsior*
aa. Leaves ovate or triangular, broadest at the base; herbage with paler tomentum.
  b. Leaves shallowly cordate, narrowly triangular with straight margins .... 4. *W. periplocifolia*
  bb. Leaves deeply cordate, broadly ovate with curved margins.
    c. Inflorescence a broad open panicle; mericarps with the medial constriction pronounced; corolla yellow .... 1. *W. amplissima*
    cc. Inflorescence a crowded narrow racemiform panicle; mericarps with the medial constriction imperfectly developed; corolla white .... 2. *W. contracta*

1. **Wissadula amplissima** (L.) R. E. Fries, Kongl. Svenska Vetenskapsakad. Handl. 43(4):48. 1908.

—*Sida amplissima* L., Sp. Pl. 685. 1753. —Type: presumably in herb. van Royen (L).

Sida hernandioides L'Hér., Stirp. Nov. 2:121, *t.58.* 1789. —*Wissadula hernandioides* (L'Hér.) Garcke, Z. Naturwiss. 63:124. 1890. —Type: in hort. Paris ex Hispaniola (G?).

Wissadula mucronulata A. Gray ex Torrey, Rep. U.S. Mex. Bound. Surv. Bot. 39. 1858. —Type: Mexico, on the Rio Grande, below Reynosa, Oct 1853, *Schott 108a* (NY!).

Illustrations: **Fig. 29**; Fries, 1908, *pl. 4, fig. 1*; Fryxell, Syst. Bot. Monogr. 25:452. *fig. 115.* 1988.

Shrubs to 2 m tall, usually unbranched below the inflorescence, with stipitate stellate hairs and also minutely puberulent. Leaves long-petiolate, ovate, deeply cordate, the margin rounded, entire, acuminate, discolorous. Inflorescence an open terminal panicle, more or less leafless, the flowers long-pedicellate; calyx 3 mm long, ca. half-divided; petals 5 mm long, yellowish; androecium included, yellowish, the filaments longer than the column. Mericarps 3–5, minutely puberulent, 6–7 mm long, constricted below, bulbous-apiculate above; seeds 3, patchily pubescent, 2.5 mm long; $2n = 14$; Aug–Jan.

Woodland margins, along streams, roadsides, and in disturbed ground generally, in Evergreen Seasonal Forest, Tropical Deciduous Forest, Thorn Woodland, Pine-Oak-Liquidambar Forest, and Pine-Oak Forest; uncommon in Northern Highlands, Central Depression, and Sierra Madre; 0 to 1200 m. U.S., Mex. (Son., Chih., N.L., Tam., Sin., S.L.P., Nay., Jal., Cma., Mich., Méx., Mlos., Pue., Ver., Gro., Oax., Yuc., Chis.), Hond., Nic., C.R., Pan., Antill., S.A. (Col., Ven., Braz.), Afr. Chiapas Collections: *42233*; *44451*; *47917*; *47934*; *48981*; *50528*; *52880*; *54138*; *60277*; *60340*.

2. **Wissadula contracta** (Link) R. E. Fries, Kongl. Svenska Vetenskapsakad. Handl. 43(4):60. 1908.

—*Sida contracta* Link, Enum. Hort. Berol. Alt. 2:204. 1822. —*Abutilon contractum* (Link) Sweet, Hort. Brit. ed. 2. 64. 1830. —Type: Madagascar, grown in the Berlin Botanic Garden (B—destroyed).

Sida luciana DC., Prodr. 1:468. 1824. —*Abutilon lucianum* (DC.) Sweet, Hort. Brit. ed. 2. 64. 1830. —*Wissadula luciana* (DC.) Benth. ex Triana & Planchon, Ann. Sci. Bot. sér. 4. 17:188. 1862. —Type: in insul. Sancta Lucia, *Anderson s.n.* (G—DC, as microfiche! as photograph F—33388!).

Sida lechenaultiana DC., Prodr. 1:468. 1824. —*Abutilon lechenaultianum* (DC.) Sweet, Hort. Brit. ed. 2. 64. 1830. —*Wissadula lechenaultiana* (DC.) Masters in J. D. Hook., Fl. Brit. India 1:325. 1874. —Type: India orient., *Lechenault s.n.* (G—DC, as microfiche!).

Abutilon leucanthemum A. St.-Hil., Fl. Bras. Merid. 1:200. 1827. —*Sida leucanthema* (A. St.-Hil.) D. Dietr., Syn. Pl. 4:852. 1847. —Type: Brazil, Rio de Janeiro, prope vicum dictum S. Gonzalo, *St.-Hilaire s.n.* (P).

Abutilon verbascoides Turcz., Bull. Soc. Imp. Naturalistes Moscou 31:203. 1858. —Types: Venezuela, prov. Caracasana, prope Tabacal, *Funcke 367*; *Galeotti* [Funcke?] *460* (P).

Illustration: Fryxell, Syst. Bot. Monogr. 25:450. *fig. 114.* 1988.

Shrubs to 2.5 m tall with several stems from the base, little-branched, the stems minutely soft-puberulent and with larger stellate hairs intermixed. Leaves petiolate, ovate, cordate, entire, the margin curved, acuminate, discolorous, softly and minutely tomentose. Inflorescence a crowded terminal panicle forming an elongated racemoid structure, essentially leafless; flowers short-pedicellate; calyx 3–3.5 mm long, ca. half-divided; petals 4–7 mm long, white; androecium included, yellowish, pubescent, the filaments longer than the column. Mericarps 5, minutely puberulent, 5–6 mm long, weakly constricted below, bulbous–apiculate above; seeds 3, patchily pubescent, 2 mm long; $2n = 14$; Oct–Nov.

On roadside in Tropical Deciduous Forest; rare in Sierra Madre; ca. 1000 m. Mex. (Chis.), Guat., Hond., Antill., S.A. (Ven., Guy., Braz.), Asia. Chiapas Collections: *F 3335* (BM, CHAPA, CTES, DS, ENCB, F, MEXU, MO, NY, WIS, pf).

3. **Wissadula excelsior** (Cav.) K. Presl, Reliq. Haenk. 2:118. 1835.

—*Sida excelsior* Cav., Diss. 1:27, *t.5.f.3.* 1785. —Type: Peru, *J. de Jussieu s.n.* (P—JU no. 12310, as microfiche!).

Abutilon patens A. St.-Hil., Fl. Bras. Merid. 1:200. 1827. —*Sida patens* (A. St.-Hil.) D. Dietr., Syn. Pl. 4:851. 1847. —*Wissadula patens* (A. St.-Hil.) Garcke, Z. Naturwiss. 63: 123. 1890. —Type: Brazil, *St.-Hilaire s.n.* (isotype: B, as photograph F—9305!).

Wissadula periplocifolia (L.) K. Presl var. *wrightiana* Griseb., Cat. Pl. Cub. 26. 1866. —Type: Cuba, *Wright 2053* (BM!).

Wissadula zeylanica Medikus var. *guatemalensis* E. G. Baker, J. Bot. 31:70. 1893. —Type: Guatemala, in dumetis Mazatenango, *Bernoulli 55* (BAS?).

Illustration: Fries, 1908, *pl. 2, fig. 2*; Fryxell, Syst. Bot. Monogr. 25:450. *fig. 114.* 1988.

Shrubs 1–2 m tall, more or less branched, ferrugineous with stipitate stellate hairs. Leaves petiolate, more or less elliptic, truncate (rarely subcordate), entire, acuminate, discolorous, glabrate on upper surface. Inflorescence a somewhat leafy panicle; calyx 3 mm long, ca. half-divided; petals 4–5 mm long, whitish; androecium included, yellowish, the filaments longer than the column. Mericarps 5–6, minutely puberulent, 6–7 mm long, constricted below, bulbous-apiculate above; seeds 3, minutely and evenly pubescent or scabridulous, 1.5 mm long; $2n = 14$; Jan–May.

In woodlands and on roadsides in Lower Montane Rain Forest; uncommon in Northern Highlands; 800 to 1000 m. Mex. (S.L.P., Ver., Tab., Chias.), Guat., Bel., Hond., Nic., Pan., Antill., S.A. (Col., Ven., Guy., Ecu., Peru, Bol., Braz., Parag.). Chiapas Collections: *F 889* (BH, CTES, pf); *Mi 1785* (MEXU); *T 3809* (DS, MO, pf).

4. **Wissadula periplocifolia** (L.) K. Presl ex Thwaites, Enum. Pl. Zeyl. 27. 1858.

—*Sida periplocifolia* L., Sp. Pl. 684. 1753. —*Wissadula zeylanica* Medikus, Malvenfam. 25. 1787. —Type: herb. Hermann, vol. 3, fol. 11, *Linn. no. 251* (BM).

Illustrations: Martius, Fl. Bras. 12(3):*pl. 77.* 1892; Fries, 1908:*pl. 1, figs. 3–4.* 1908; Fawcett and Rendle, Fl. Jamaica, 5:94, *fig. 41.* 1926; Fryxell, Syst. Bot. Monogr. 25: 450. *fig. 114.* 1988; Fl. Lesser Antilles 5:257. *fig. 100.* 1989.

Shrubs 1–2 m tall, more or less branched, stellate-pubescent, the hairs frequently stipitate (especially on younger growth). Leaves short-petiolate, ovate-triangular, cordate, the margins straight, entire, acute, markedly discolorous, glabrate on upper surface. Inflorescence a more or less leafless panicle; calyx 2.5–3 mm long; petals 3–4 mm long, yellow or white, sometimes white with dark red basal spot; androecium included, the filaments longer than the column. Mericarps 4–5, minutely puberulent, 5–6 mm long, constricted below, bulbous-apiculate above; seeds 3, patchily to densely pubescent, 2.5 mm long; $2n = 14$.

In brushy areas and disturbed ground in Tropical Deciduous Forest; uncommon in the Gulf Coastal Plain, Central Depression, and Pacific Coastal Plain; 0 to 1000 m. Mex. (Tam., Ver., Gro., Oax., Chis.), Hond., Salv., Nic., C.R., Pan., Antill., S.A. (Col., Ven., Bol., Braz.), Asia. CHIAPAS COLLECTIONS: *F3197* (CHAPA, DS, ENCB, MEXU, pf); *P 6924* (MO, UC US); *13682*; *36761*; *47234*; *5282*; *52885*.

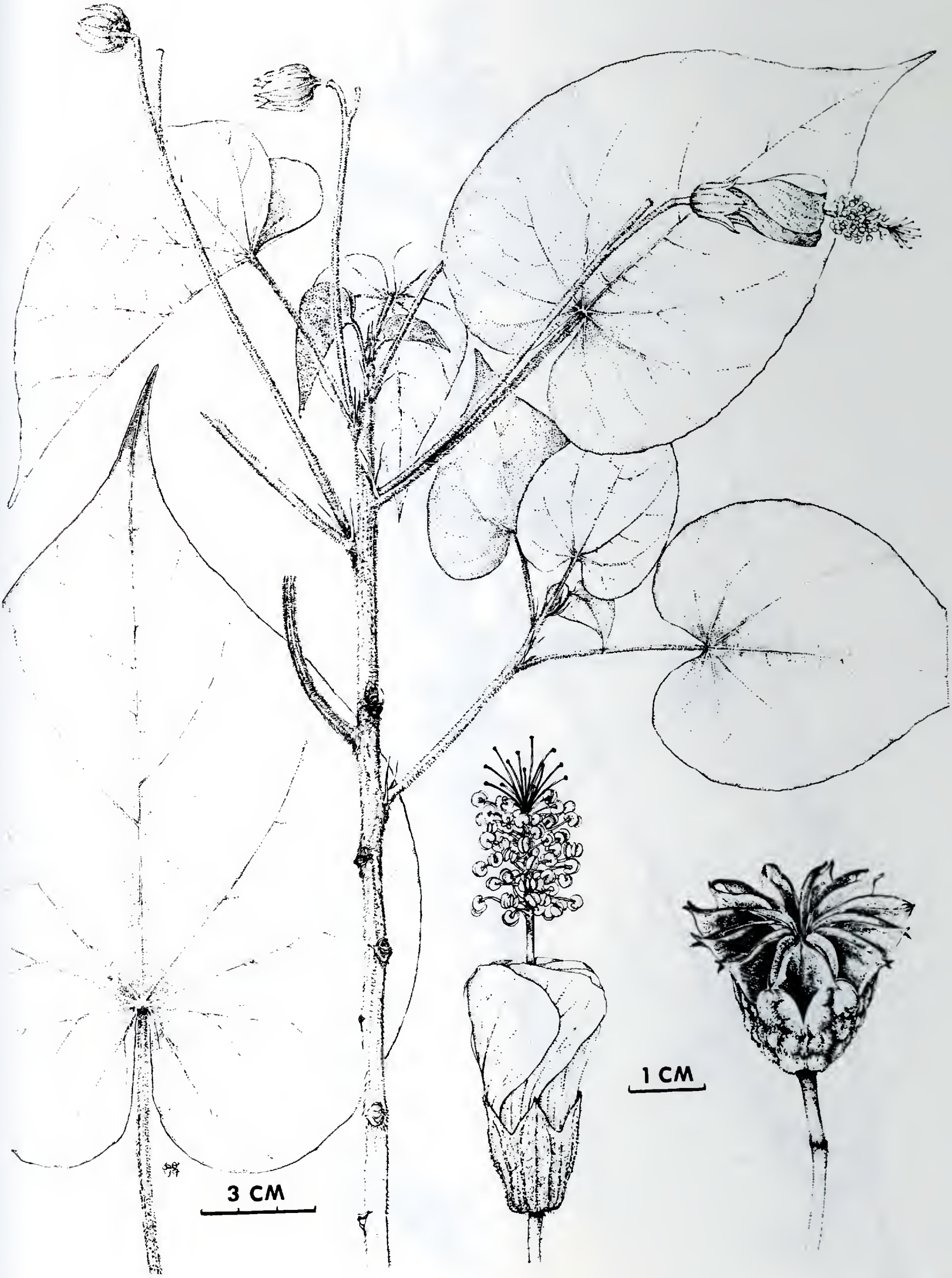


FIGURE 1. *Abutilon tridens* Standley & Steyerm. Flowering branch (center), isolated mid-stem leaf (bottom left), flower at anthesis (bottom center), and mature fruit (bottom right) [branch, *Ton 4155*; flower and fruit, *Breedlove 9384*].

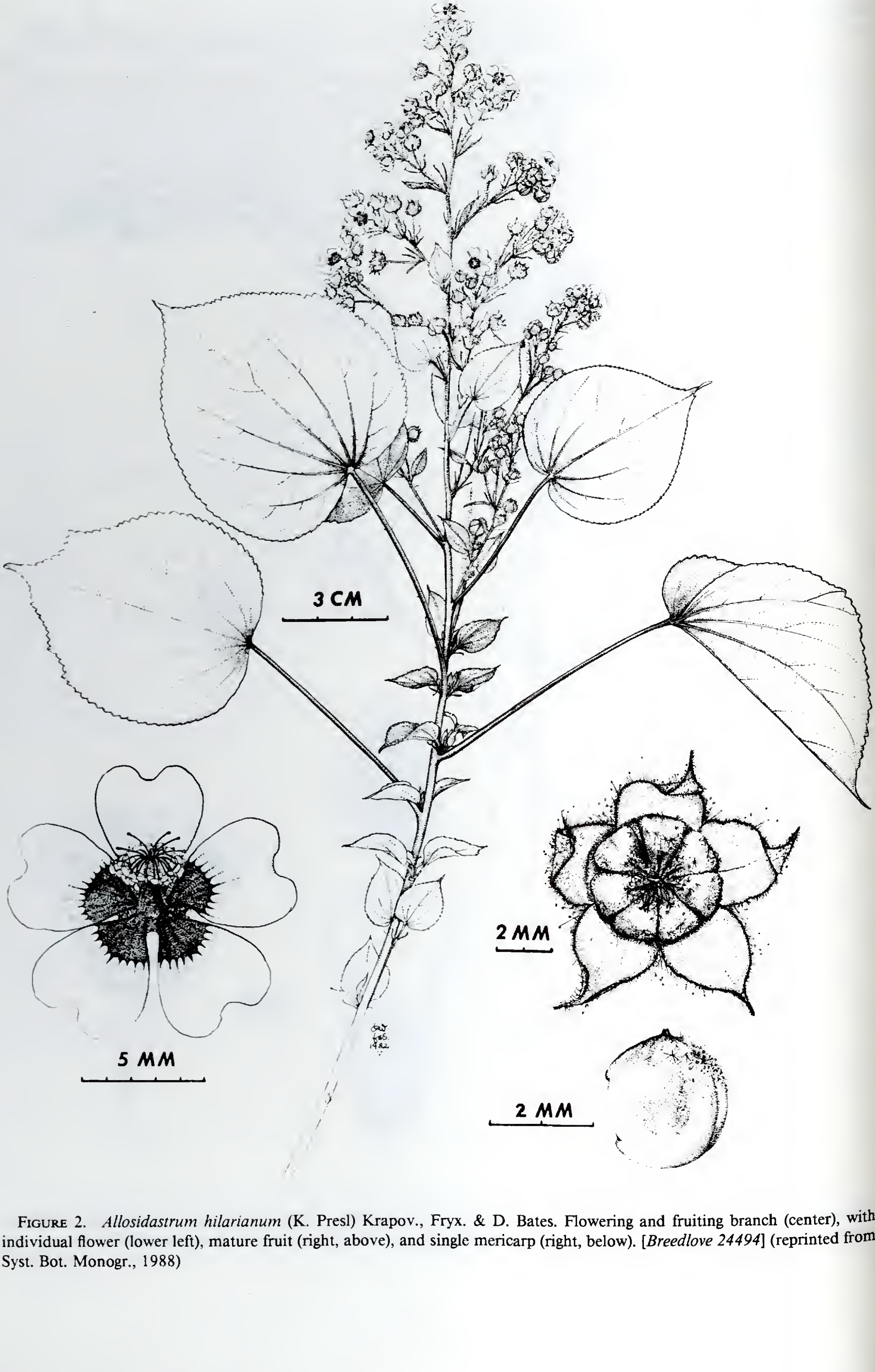


Figure 2. *Allosidastrum hilarianum* (K. Presl) Krapov., Fryx. & D. Bates. Flowering and fruiting branch (center), with individual flower (lower left), mature fruit (right, above), and single mericarp (right, below). [*Breedlove 24494*] (reprinted from Syst. Bot. Monogr., 1988)

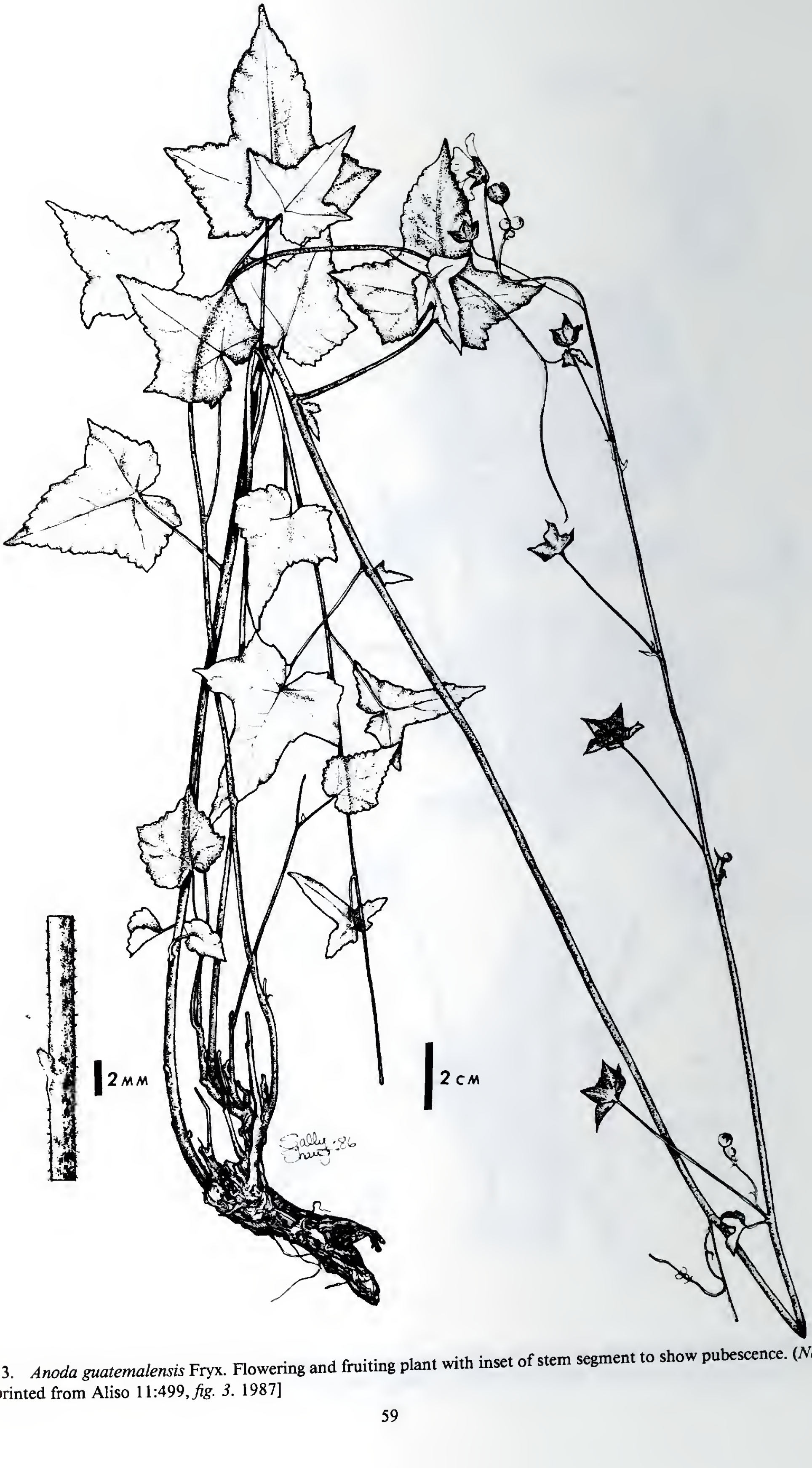


FIGURE 3. *Anoda guatemalensis* Fryx. Flowering and fruiting plant with inset of stem segment to show pubescence. (*Nelson 3169*) [reprinted from Aliso 11:499, *fig. 3.* 1987]

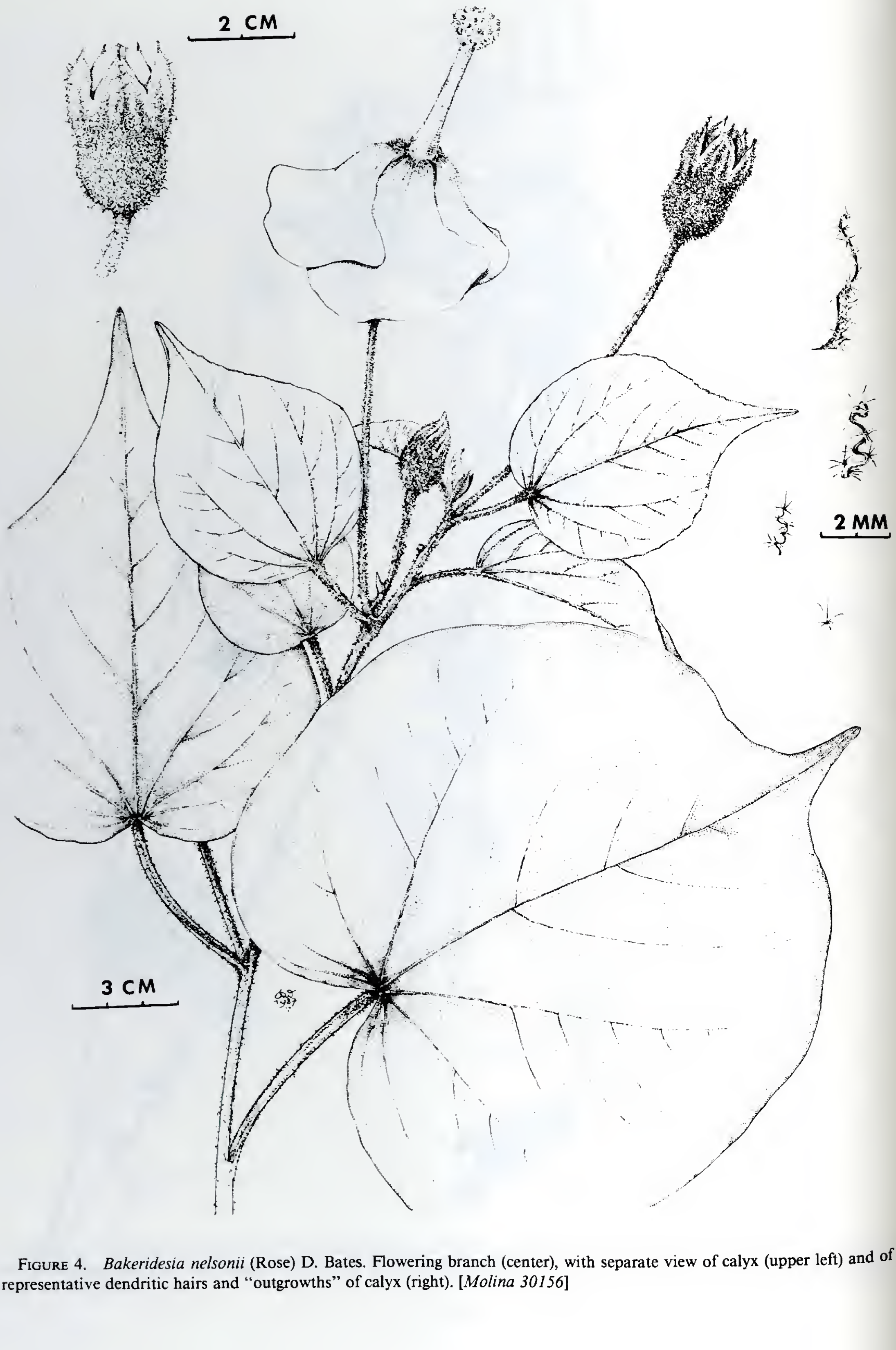


FIGURE 4. *Bakeridesia nelsonii* (Rose) D. Bates. Flowering branch (center), with separate view of calyx (upper left) and of representative dendritic hairs and "outgrowths" of calyx (right). [*Molina 30156*]

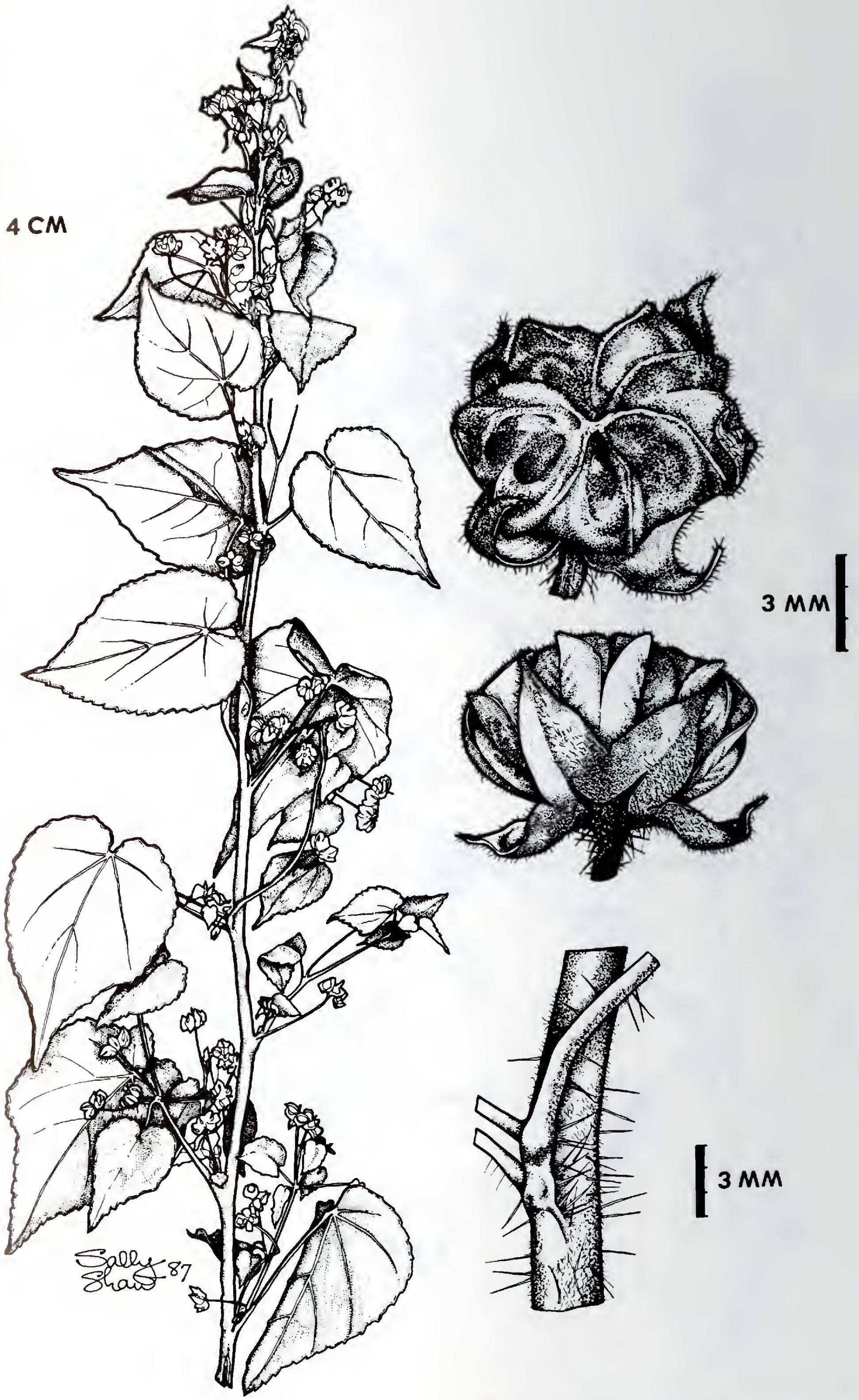


FIGURE 5. *Bastardia viscosa* (L.) Kunth. Flowering and fruiting branch (left); two aspects of mature fruits (above right), and stem detail (lower left). (*Stevens 5181*; fruits, *Jones 28*) [reprinted from Syst. Bot. Monogr., 1988]

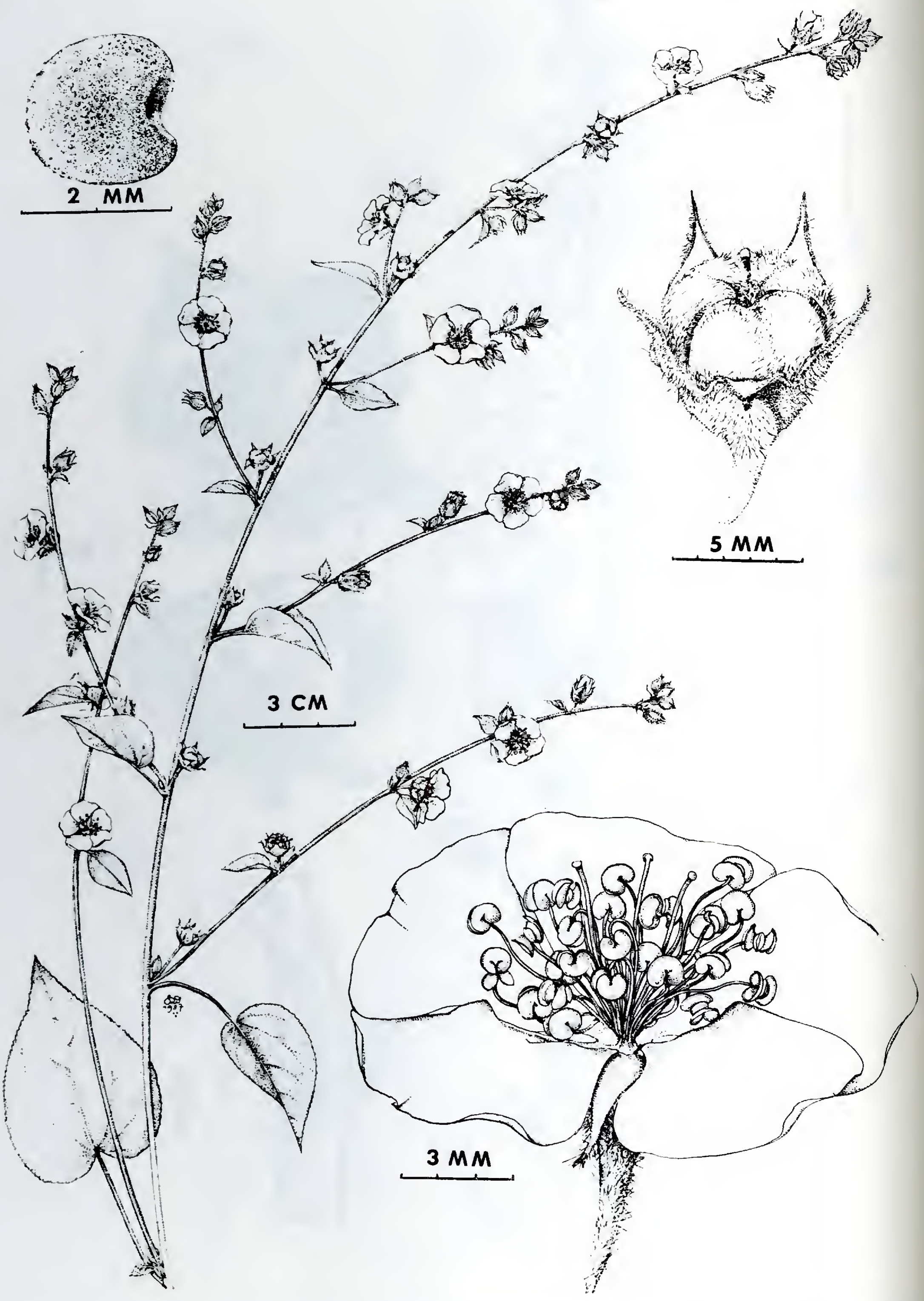


FIGURE 6. *Bastardiastrum gracile* (Hochr.) D. Bates. Flowering branch (center), individual flower at anthesis (bottom right), mature fruit (upper right), and individual seed (upper left). [*Fryxell and Lott 3273*]

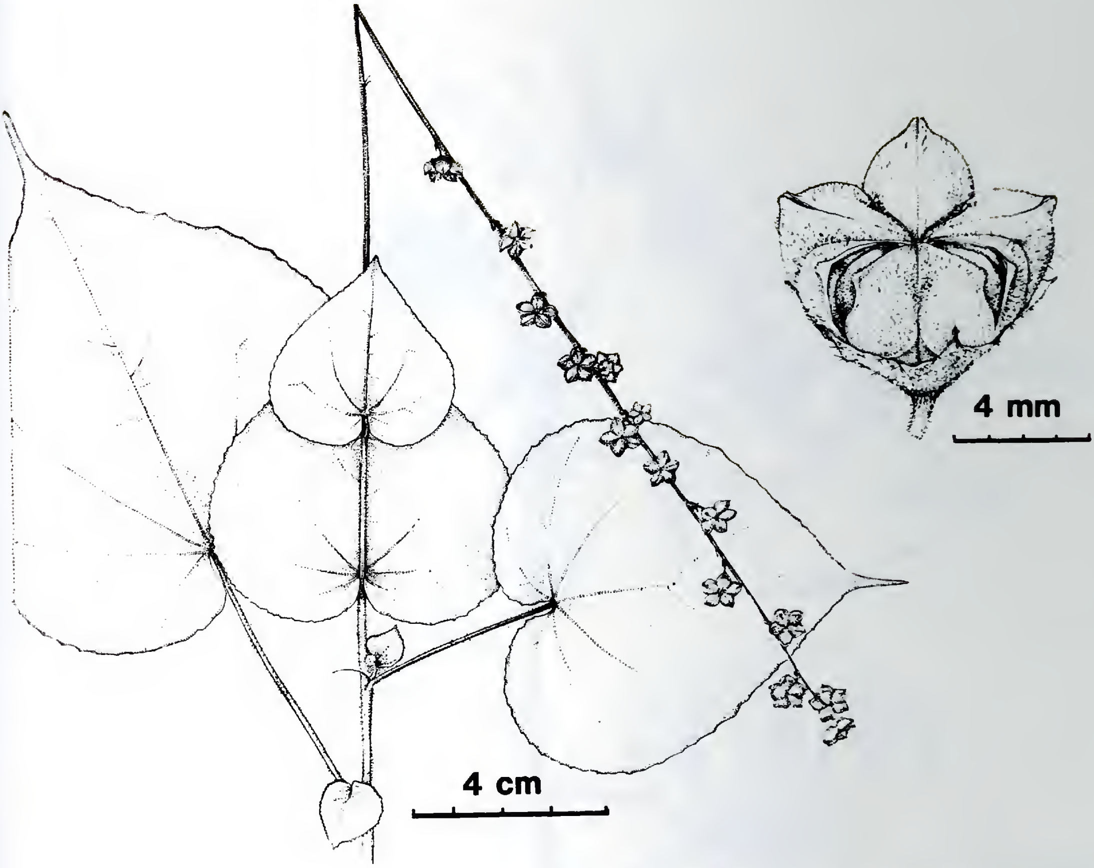


FIGURE 7. *Briquetia spicata* (Kunth) Fryx. Flowering branch (left) and individual mature fruit (right). [*Fryxell and Bates 2110*]

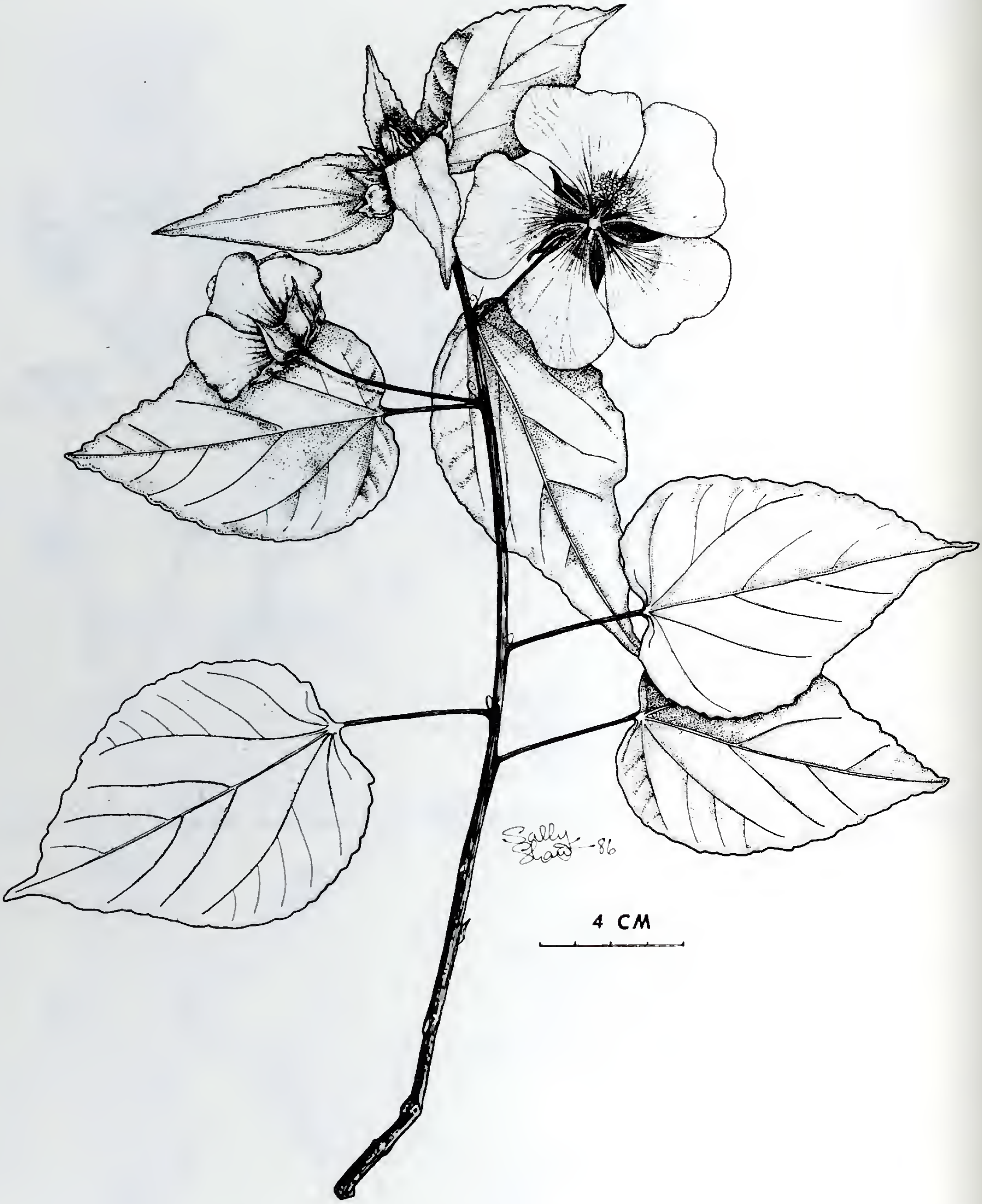


Figure 8. *Dendrosida sharpiana* (Miranda) Fryx. Flowering branch. [reprinted from Syst. Bot. Monogr., 1988] [*Fryxell 2580a*]

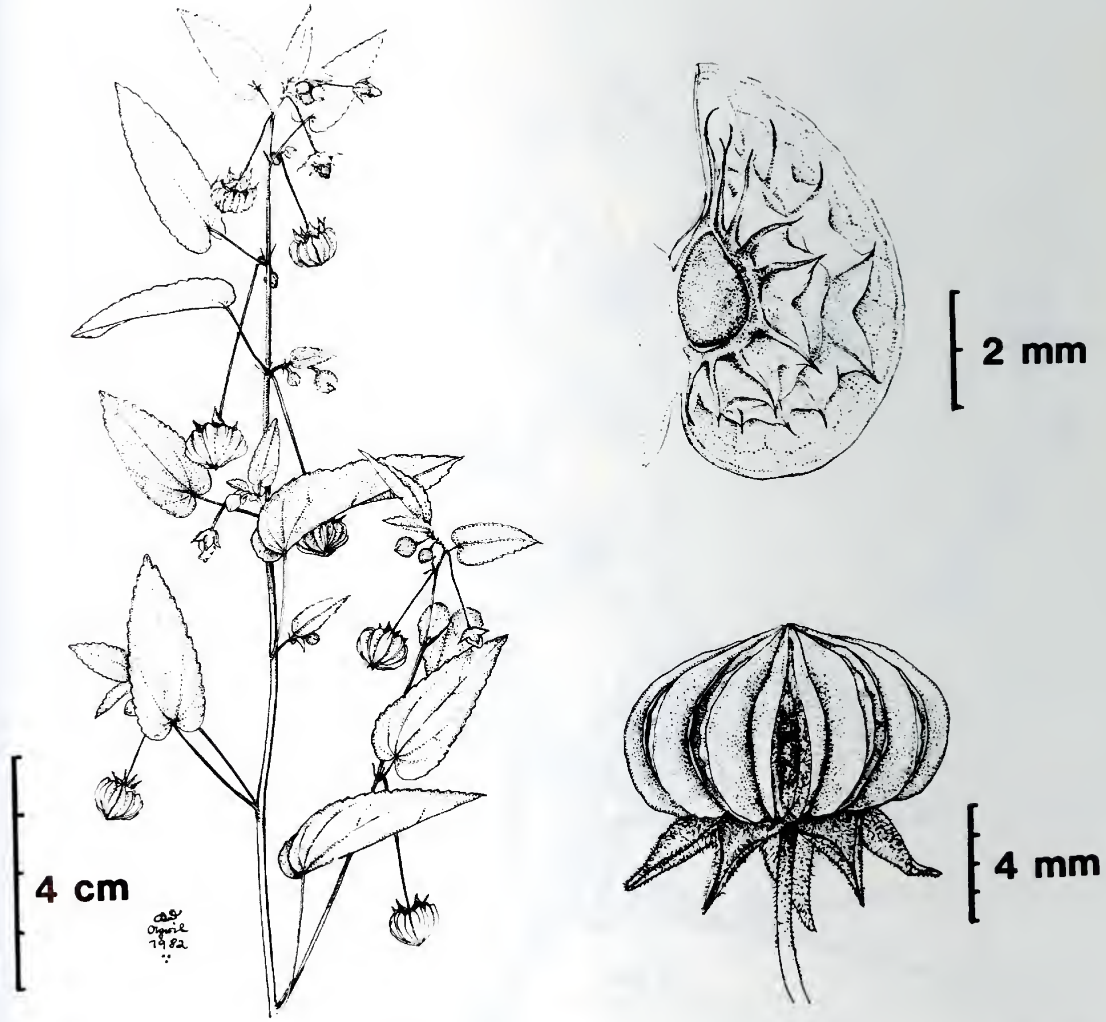
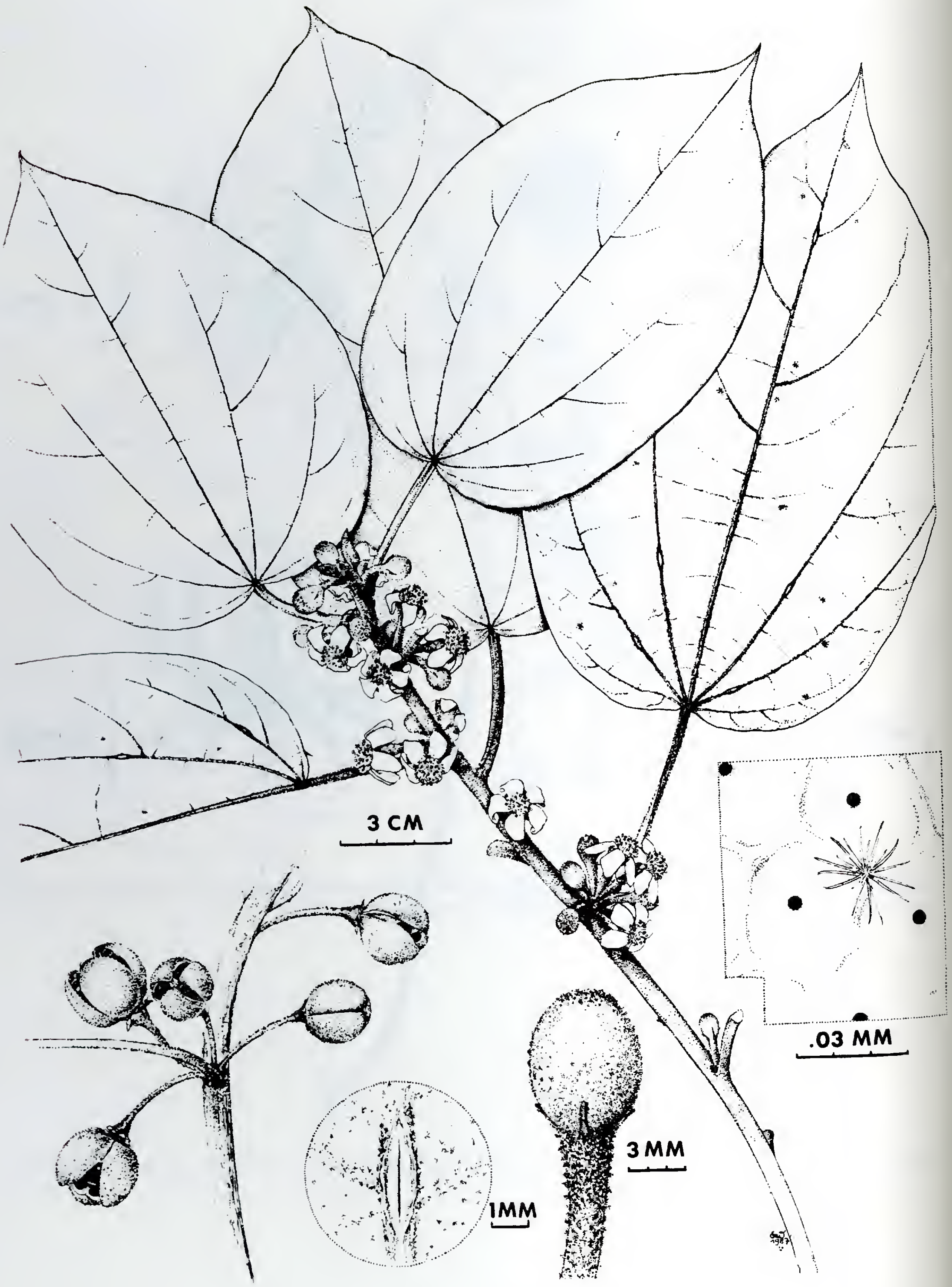


FIGURE 9. *Gaya minutiflora* Rose. Flowering branch (left), with mature fruit (lower right) and mericarp (upper right) with near carpel wall removed to show endoglossum encircling seed. [*Fryxell and Bates 2111*]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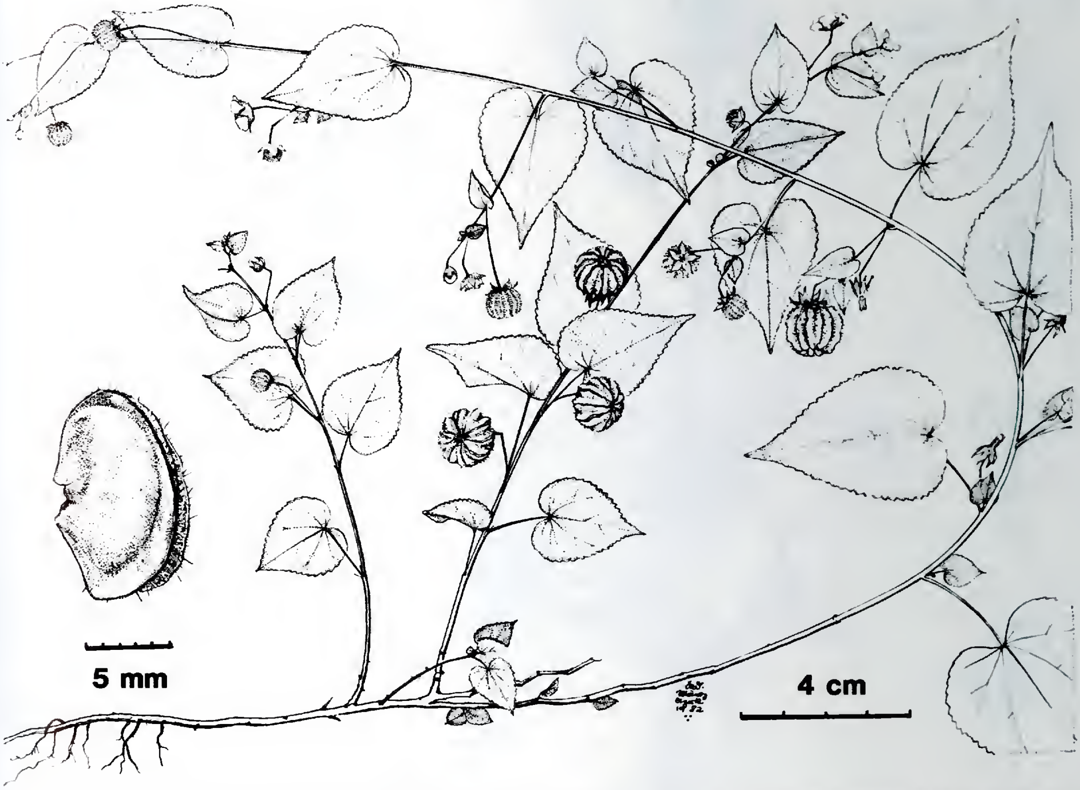

FIGURE 11. *Herissantia crispa* (L.) Briz. Flowering and fruiting branch (right), with individual mericarp (left). [*Wilbur and Wilbur 2275*]

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FIGURE 10. *Hampea stipitata* S. Watson. Flowering branch of staminate tree (center), stem segment of fruiting branch of pistillate tree (lower left), abaxial foliar nectary (inset lower left), flower bud with involucel (bottom center), and segment of leaf blade showing placement of gossypol glands in individual areolae (inset, right). [*Breedlove and Strother 46926*; fruits, *Ton 3807*]

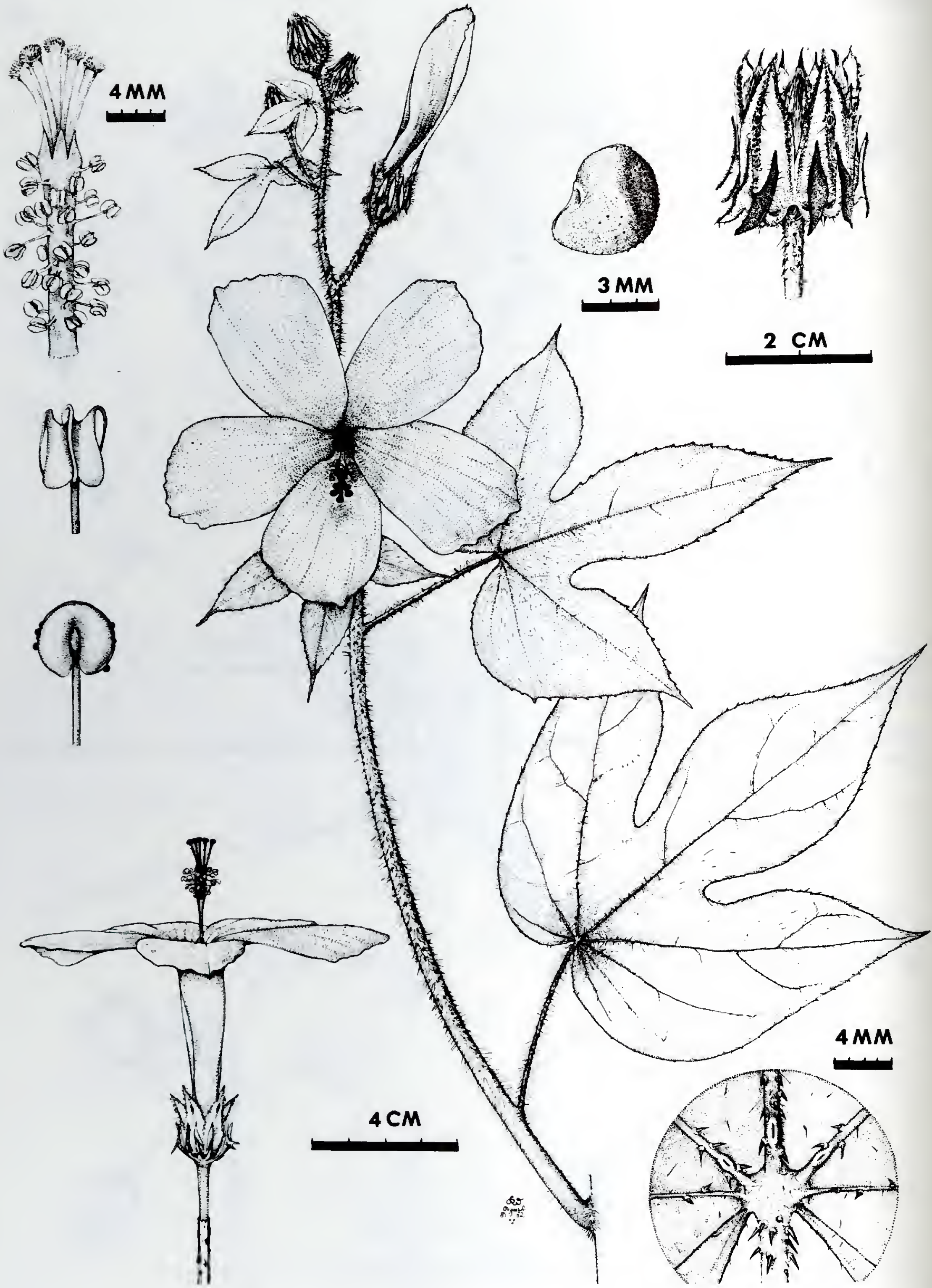

FIGURE 12. *Hibiscus uncinellus* DC. Flowering branch (center) and detail of lower surface of leaf blade (inset) [*McVaugh 22266*] showing foliar nectaries; at left (top to bottom): apex of staminal column with exserted stigmas, individual anthers, and lateral view of flower [*McVaugh 23254*]; at top right: individual seed and mature fruit [*Ton 3563*].

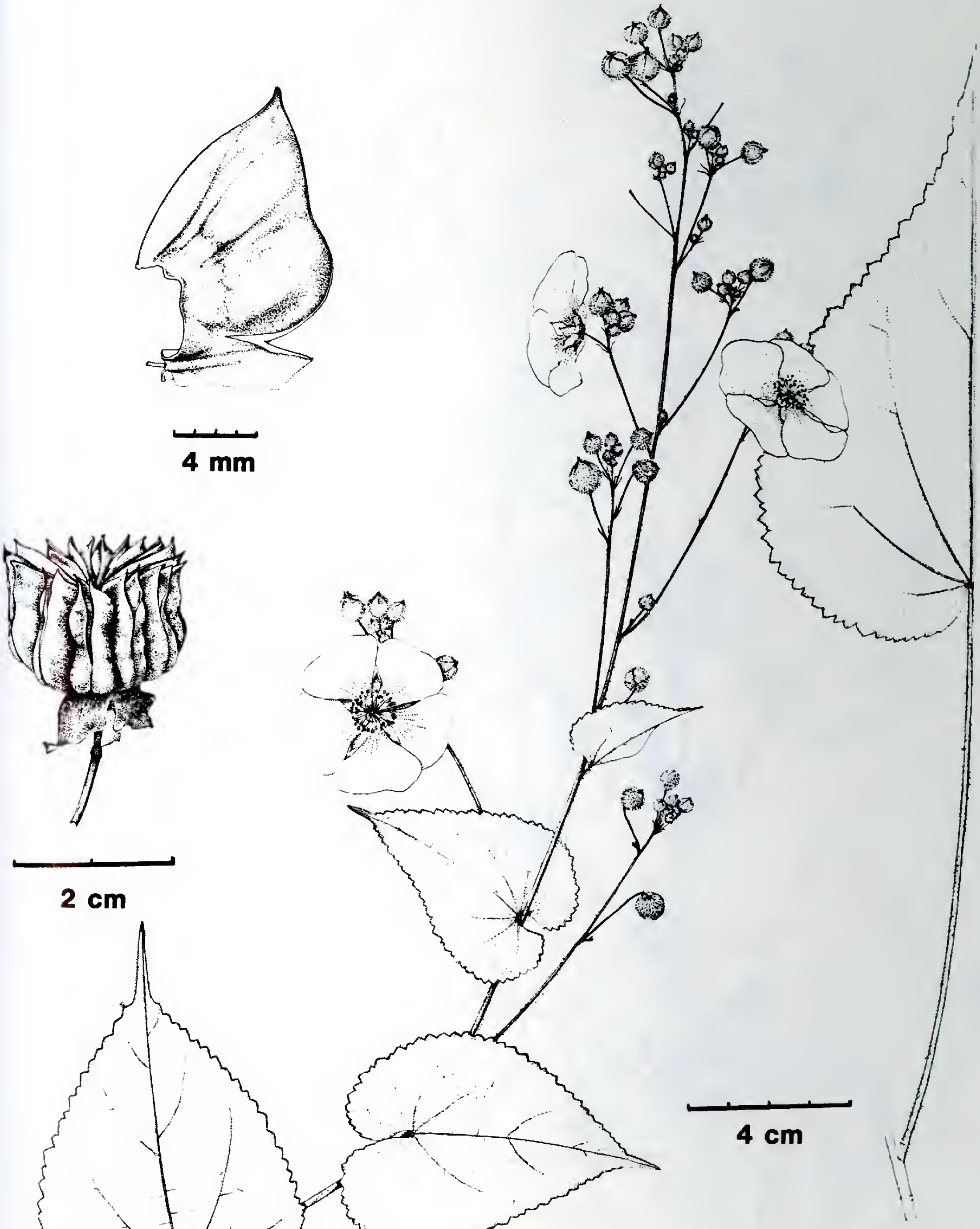

FIGURE 13. *Hochreutinera amplexifolia* (DC.) Fryx. Flowering branch (right), with mature fruit (lower left) and individual carpel (upper left) with near carpel wall and seeds removed to show small endoglossum. [*Fryxell 1551*]

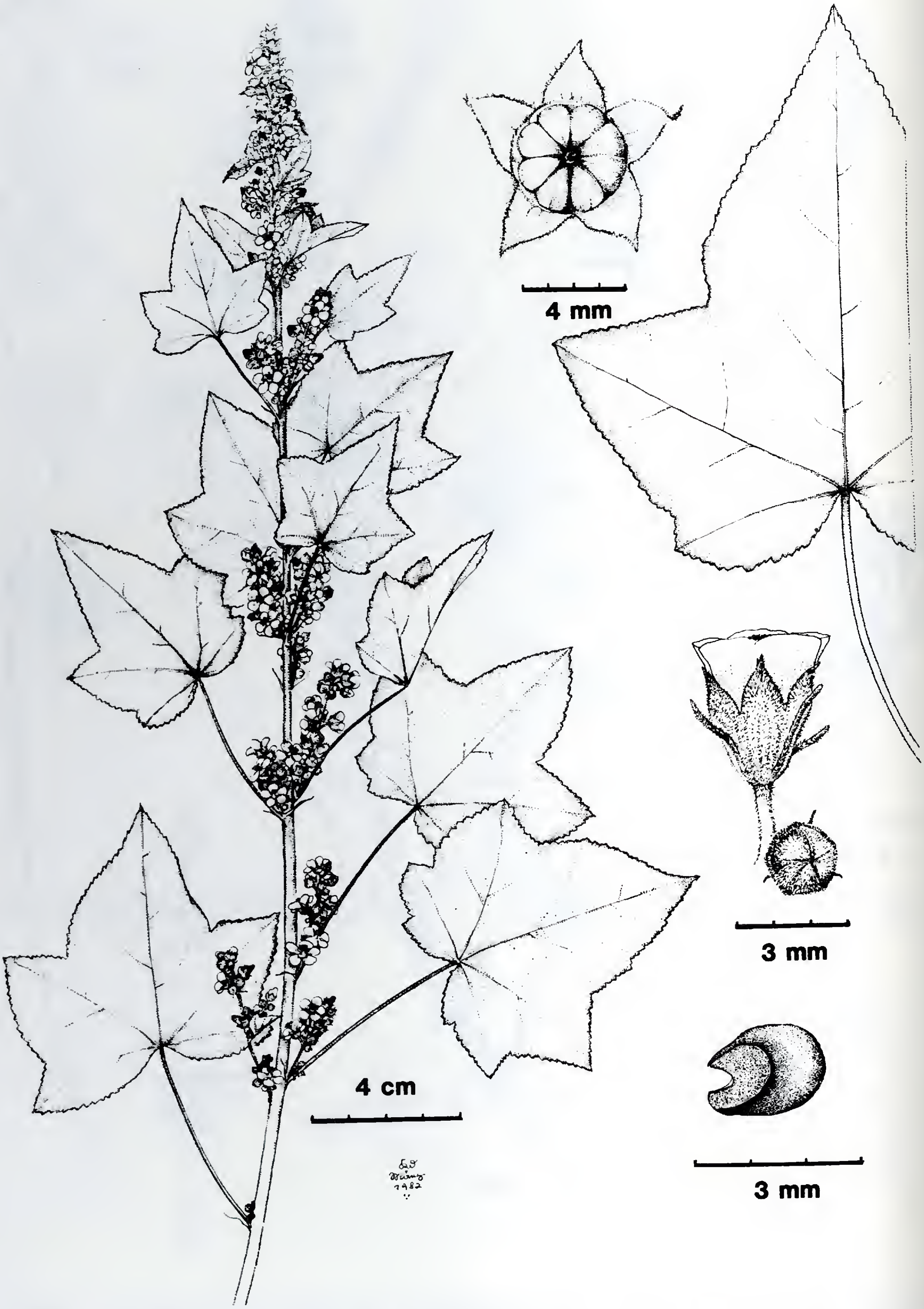

FIGURE 14. *Kearnemalvastrum subtriflorum* (Lagasca) D. Bates. Flowering and fruiting branch (left), with (right, top to bottom): individual fruit, leaf, flower and bud, mericarp. [*King et al. 4764*; mericarp, *Hinton et al. 7179*]

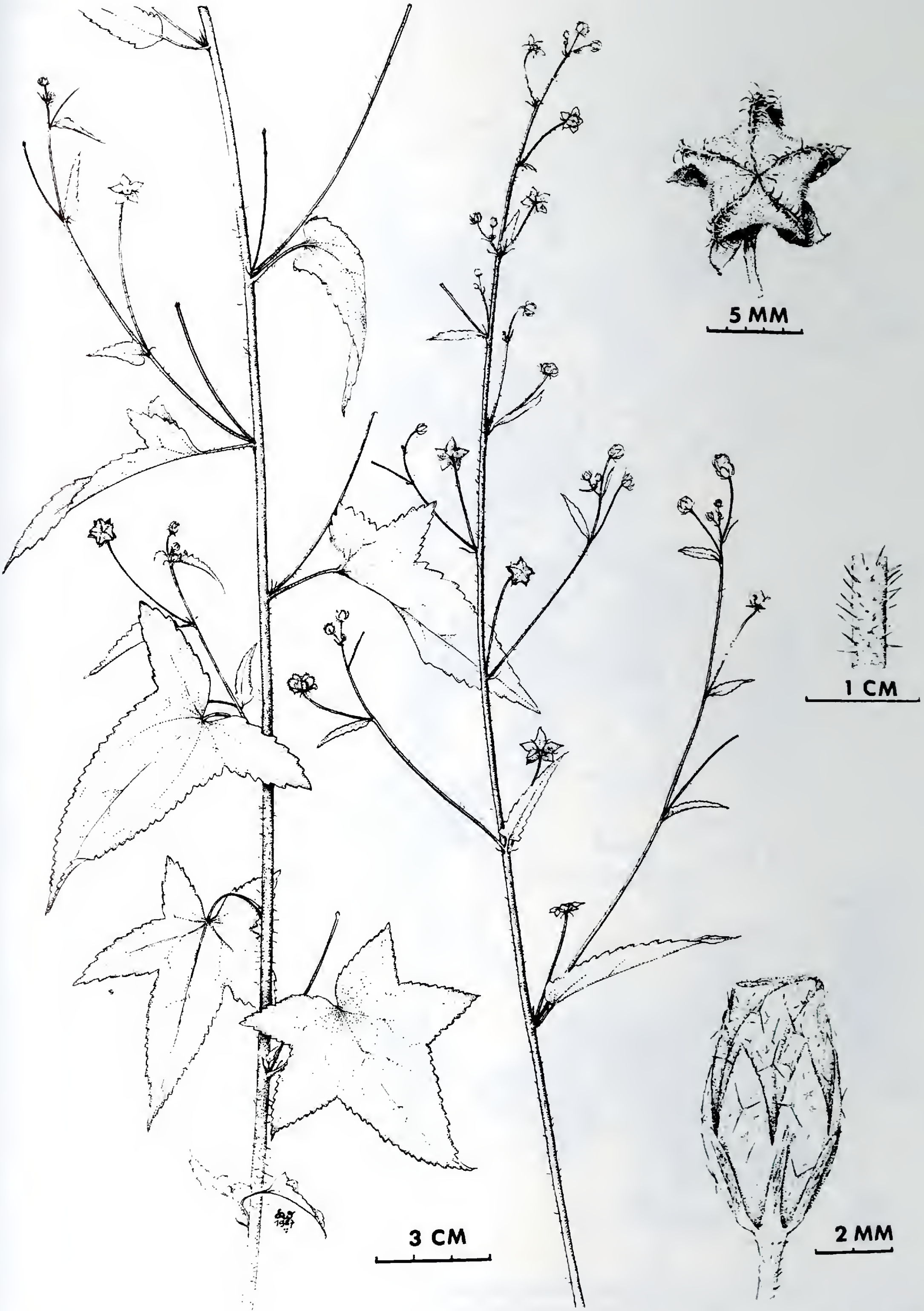

FIGURE 15. *Kosteletzkya depressa* (L.) O. Blanchard, Fryx. & D. Bates. Flowering and fruiting branch (left and center), mature fruit (top right), stem segment (center right), and flower bud shortly before anthesis (bottom right). [*Koch, Fryxell and Wendt 79431*]

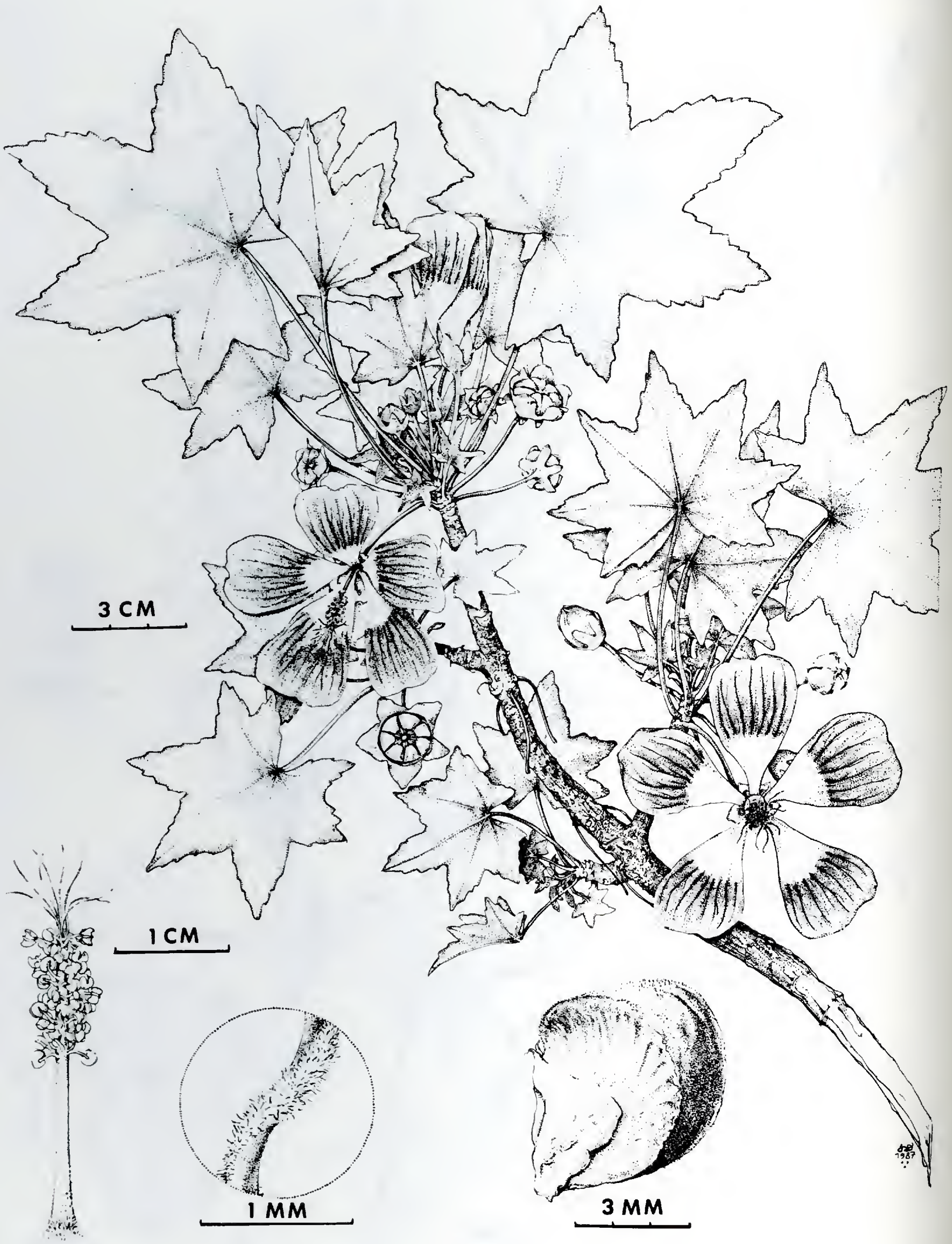

FIGURE 16. *Lavatera assurgentiflora* Kellogg. Flowering and fruiting branch (center), androecium with emergent styles (bottom left), segment of style showing unilateral stigmatic zone (inset), and individual mericarp. [*Thorne 39400*]

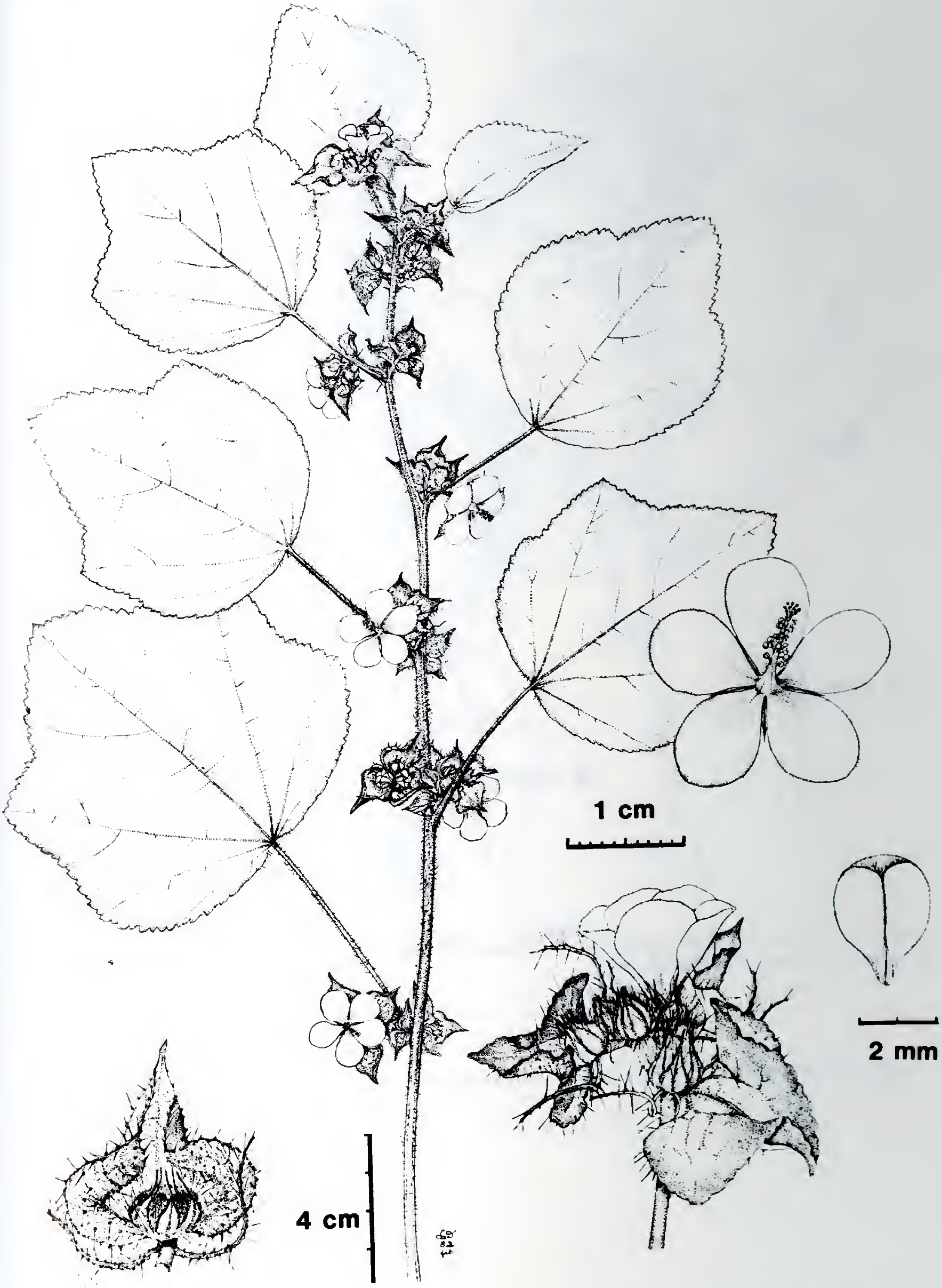

FIGURE 17. *Malachra alceifolia* Jacq. Flowering and fruiting branch, with (left to right) fruit with floral bract attached, crowded inflorescence, individual mericarp (ventral view), and flower. [*Dieterle 3103a*]

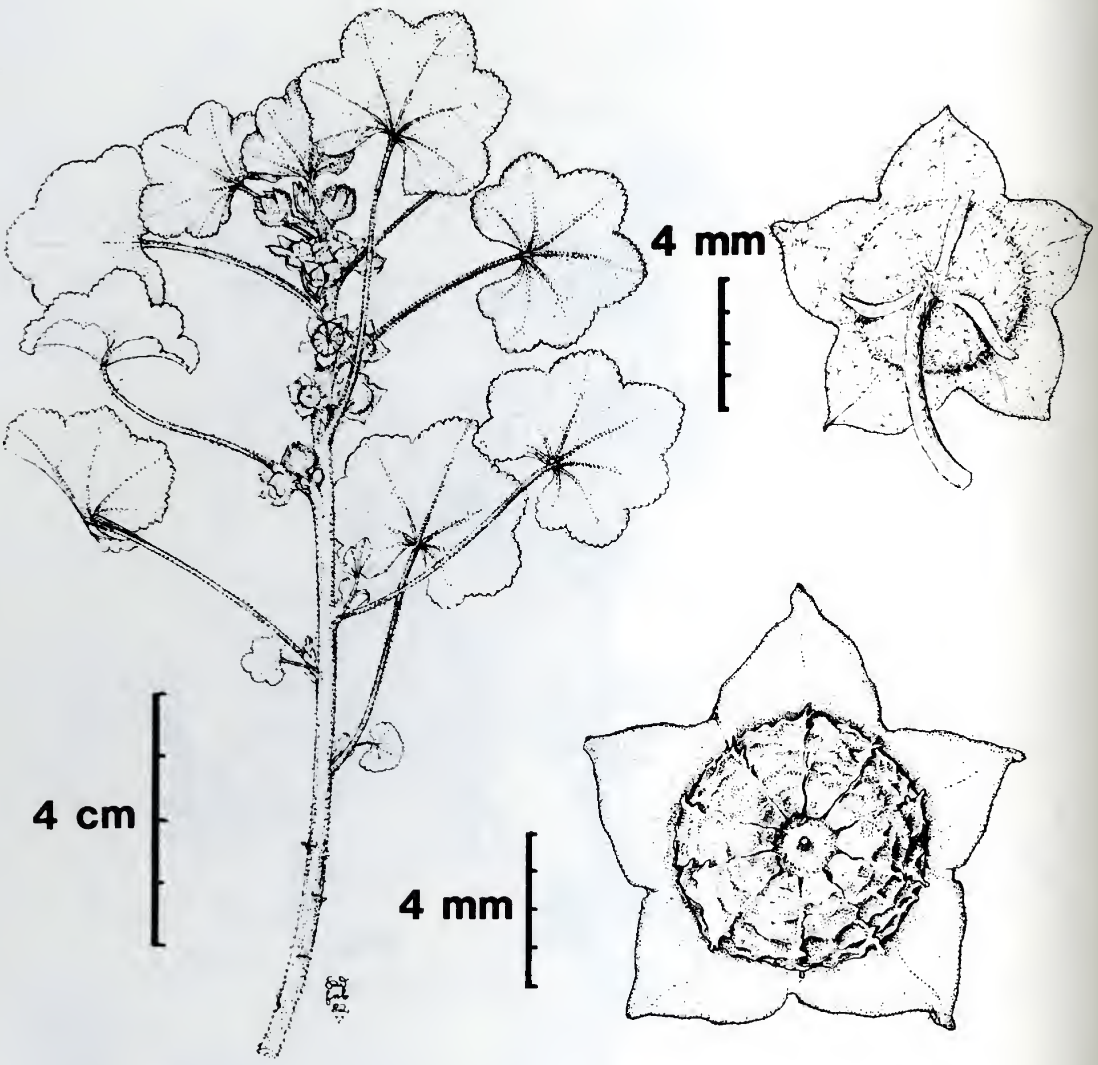

FIGURE 18. *Malva parviflora* L. Fruiting branch (left) with view of calyx and involucel from beneath (upper right) and of fruit from above (lower right). [*Palmer 48*]

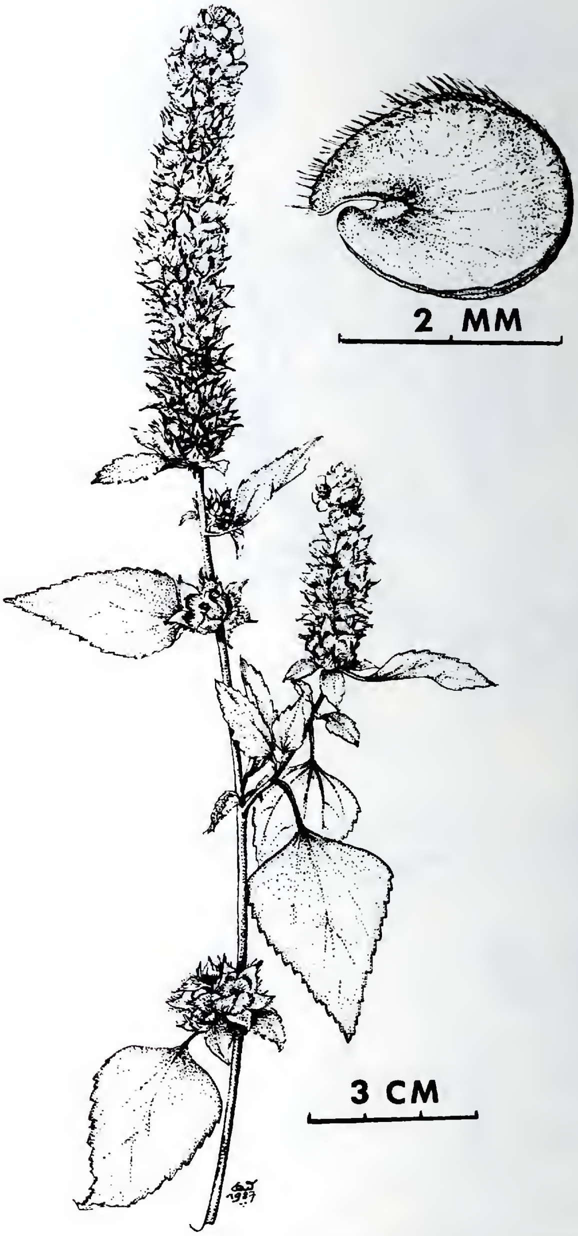

FIGURE 19. *Malvastrum americanum* (L.) Torrey. Flowering and fruiting branch with enlargement of individual mericarp. [*González 169*]

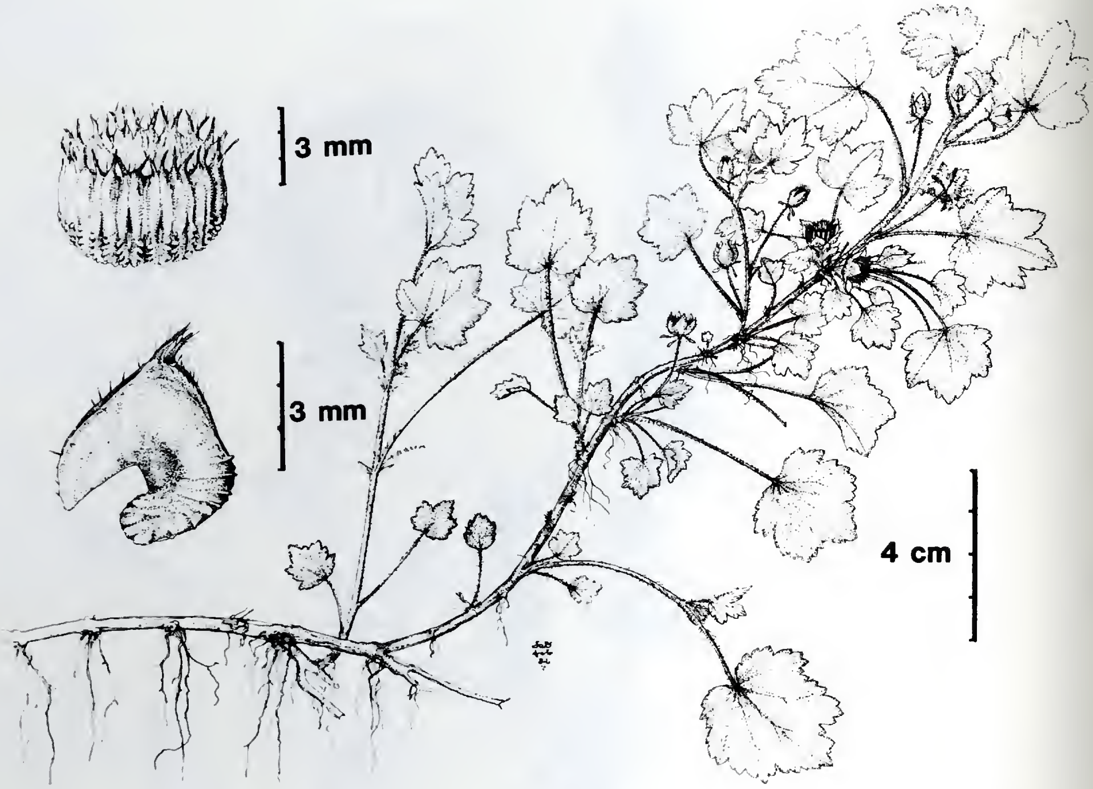

FIGURE 20. *Modiola caroliniana* (L.) G. Don. Flowering and fruiting branch (right), with mature fruit (upper left) and individual carpel (lower left). [*Turner 1907*; mericarp, *Fryxell 2594*]

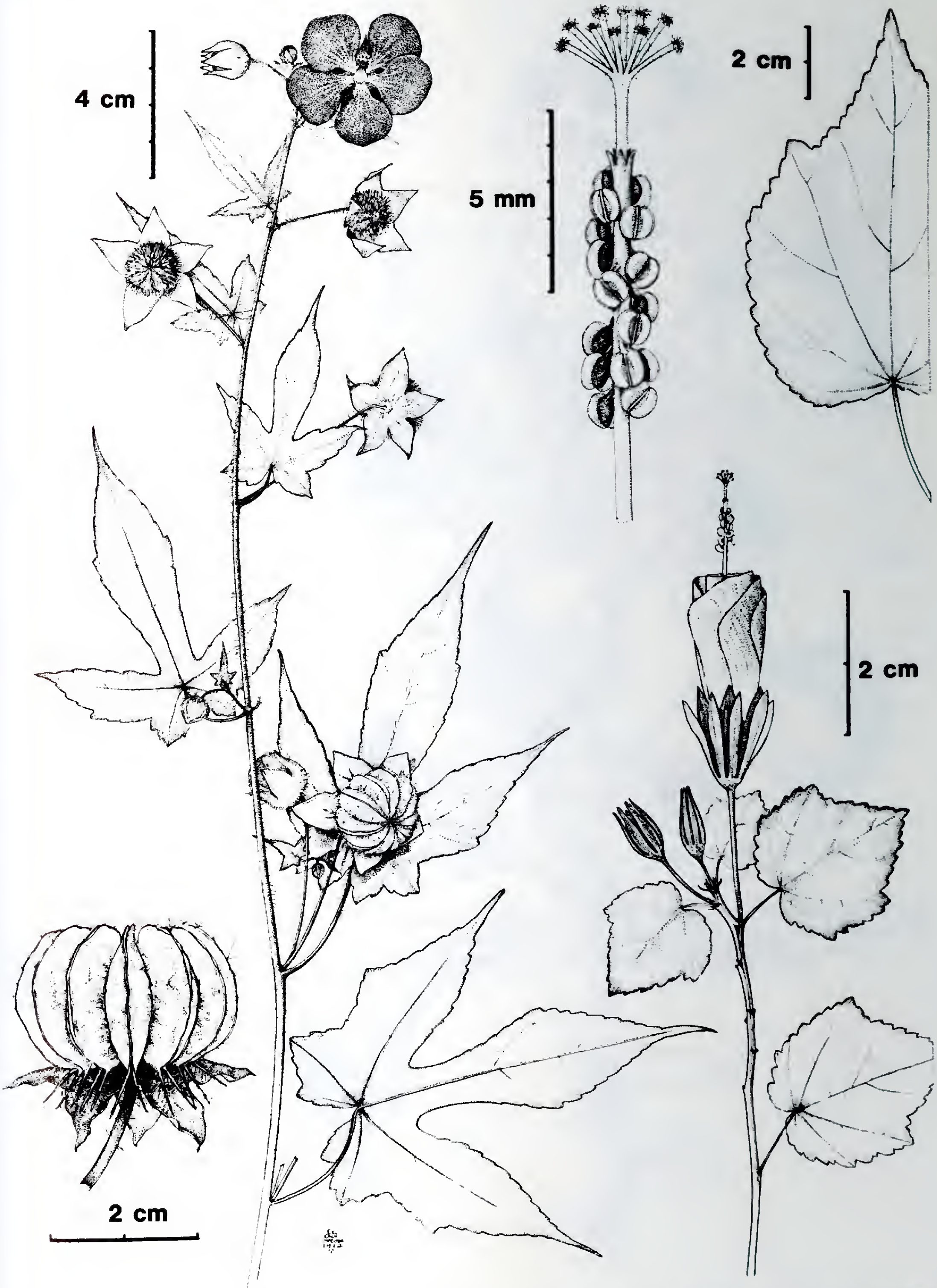

FIGURE 21. *Neobrittonia acerifolia* (G. Don) Hochr. and *Malvaviscus arboreus* Cav. Left: fruiting branch and individual fruit of *Neobrittonia* [*McVaugh 24892*]. Right: flowering branch of *Malvaviscus* with enlarged view of androecium and stigmas. [*García 569*]

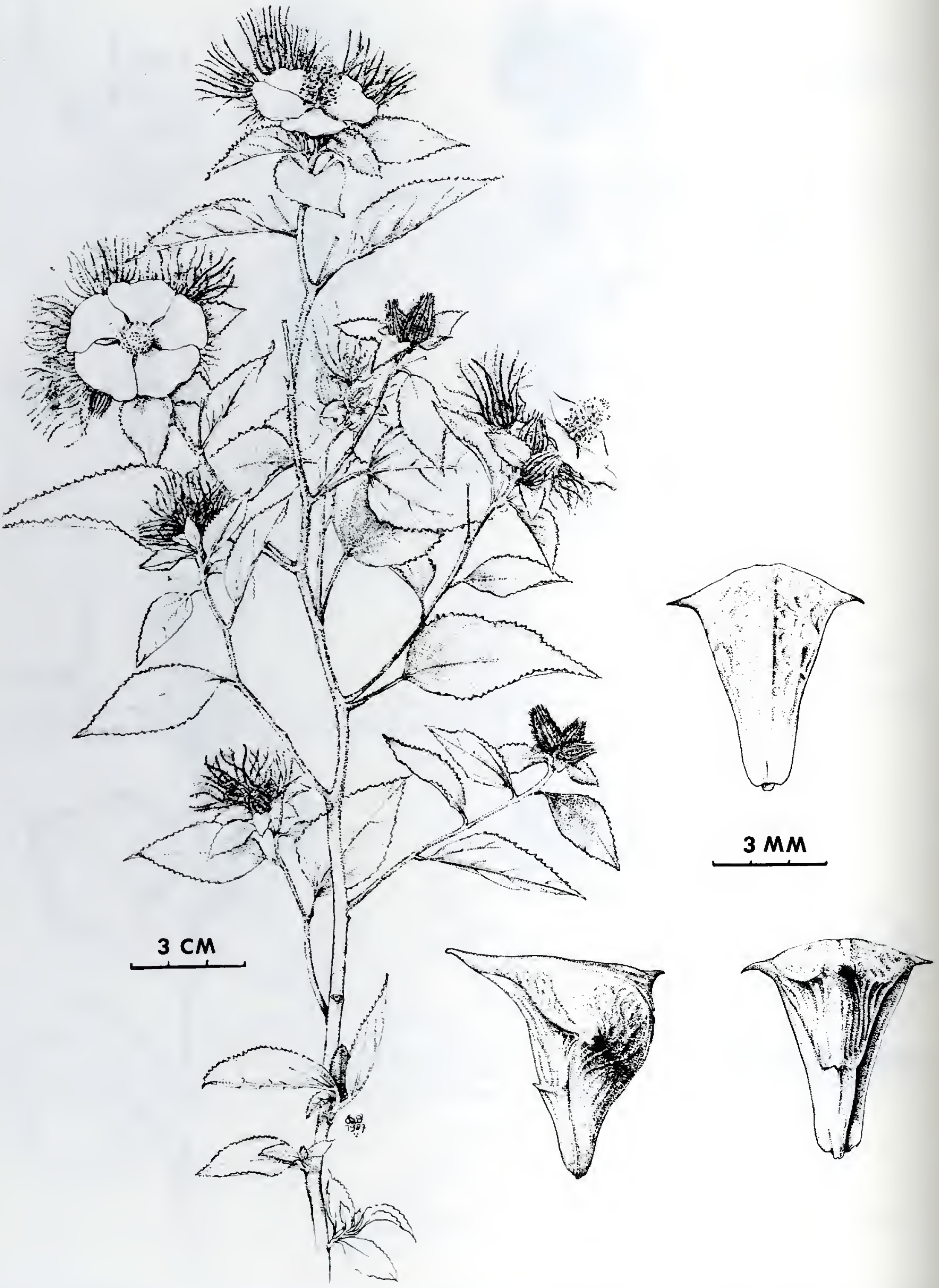

FIGURE 22. *Pavonia submutica* Fryx. Flowering and fruiting branch (left), with three views (dorsal, lateral, and ventral) of individual mericarp (right). [*Harriman 14399*]

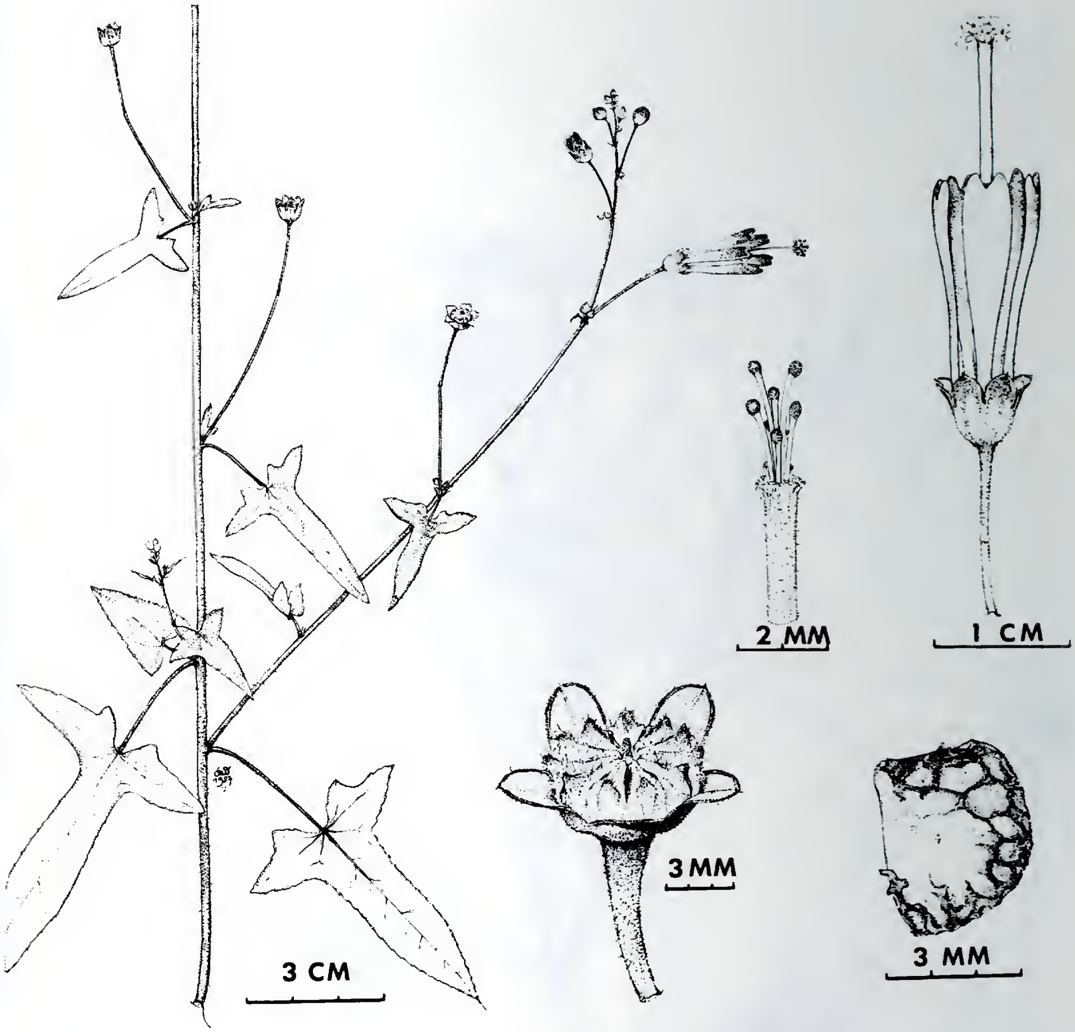

FIGURE 23. *Periptera punicea* (Lagasca) DC. Flowering and fruiting branch (left), flower at anthesis (upper right), distal portion of staminal column with anthers removed to show emerging styles and stigmas (upper center), nearly mature fruit (bottom center), and individual seed (bottom right) with adhering parts of reticulate endocarp. [*Koch and Fryxell 8316*]

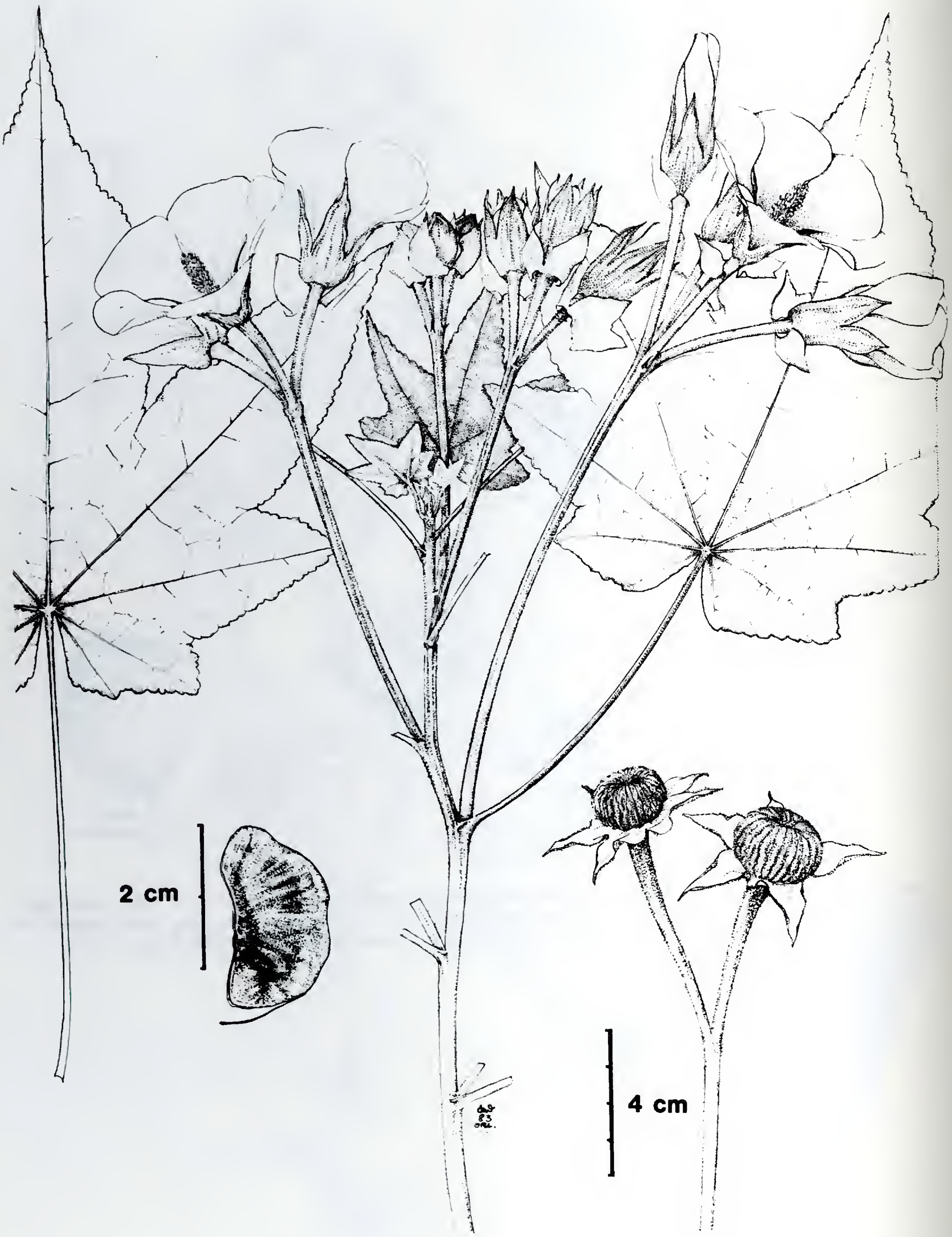

FIGURE 24. *Phymosia rosea* (DC.) Kearney. Flowering branch, with immature fruits (lower right) and individual mericarp (lower left). [*McVaugh 23098*; mericarp, *Fryxell 1181*]

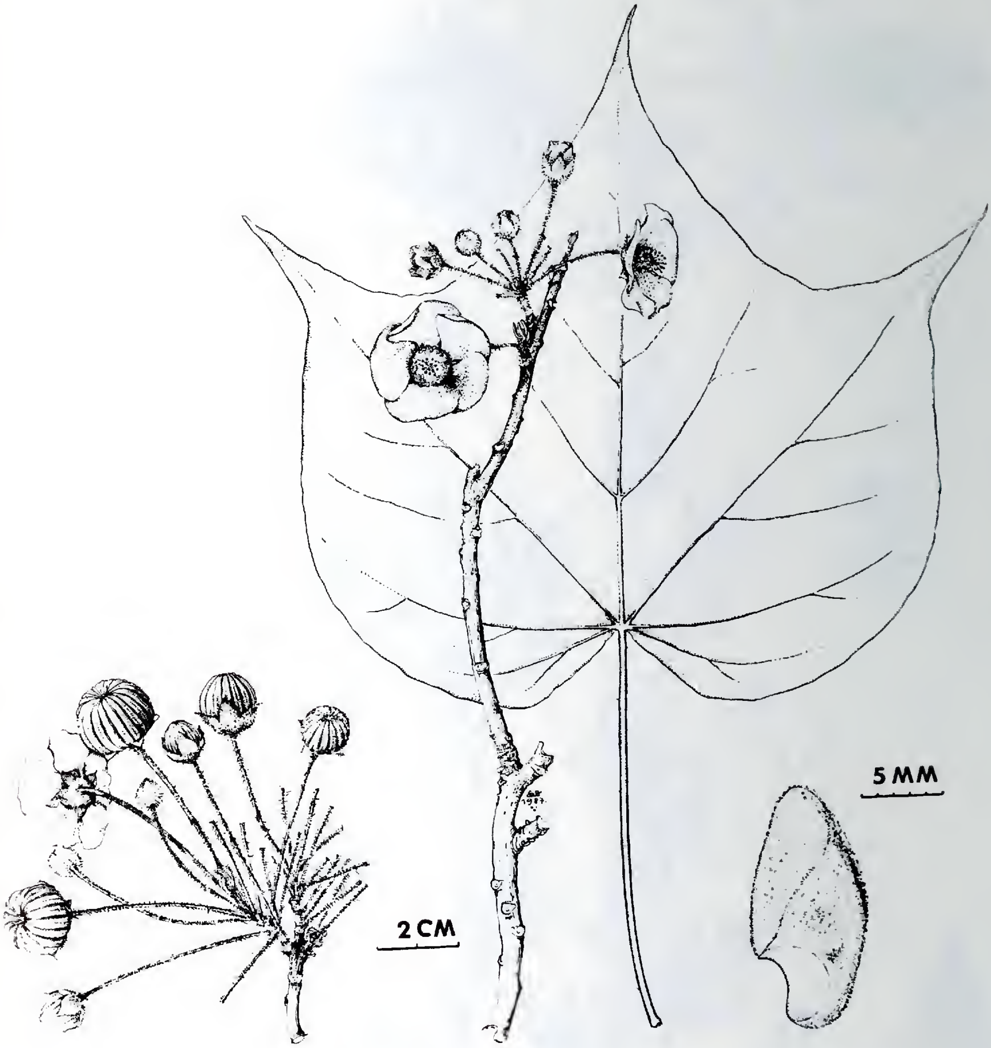

Figure 25. *Robinsonella pilosissima* Fryx. Left to right: portions of fruiting and flowering branches, individual leaf, and individual mericarp. [*Laughlin 172*; *Breedlove 9111, 50468*; *Breedlove and Thorne 30370*]

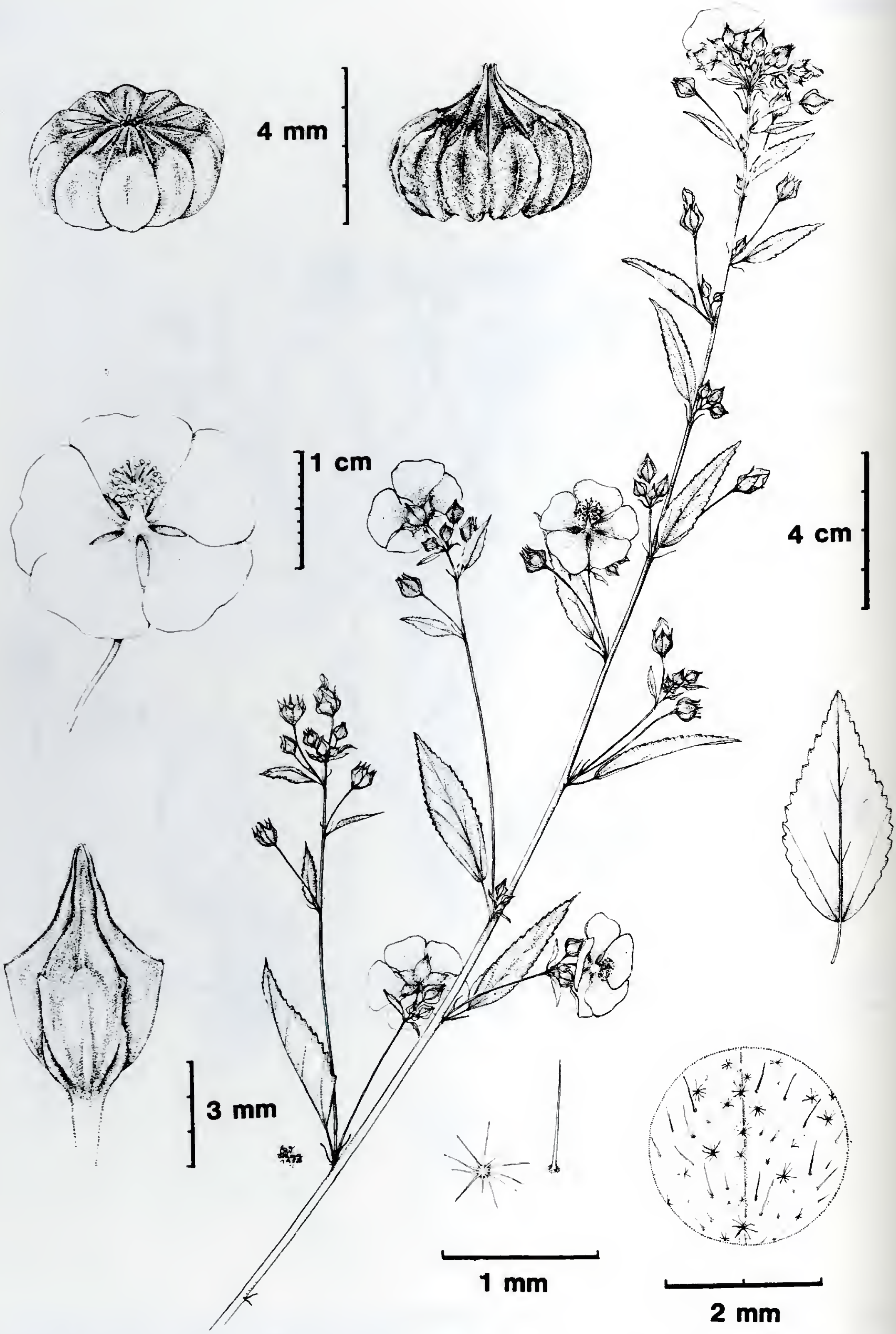

FIGURE 26. *Sida haenkeana* K. Presl. Flowering branch (center) and midstem leaf (right) with foliar pubescence (inset); left (top to bottom): fruit, flower, and flower bud [*McVaugh 13164*; fruit, *Matuda 26811*]. Top center: fruit of *Sida rhombifolia* L. for comparison [*Fryxell 728*].

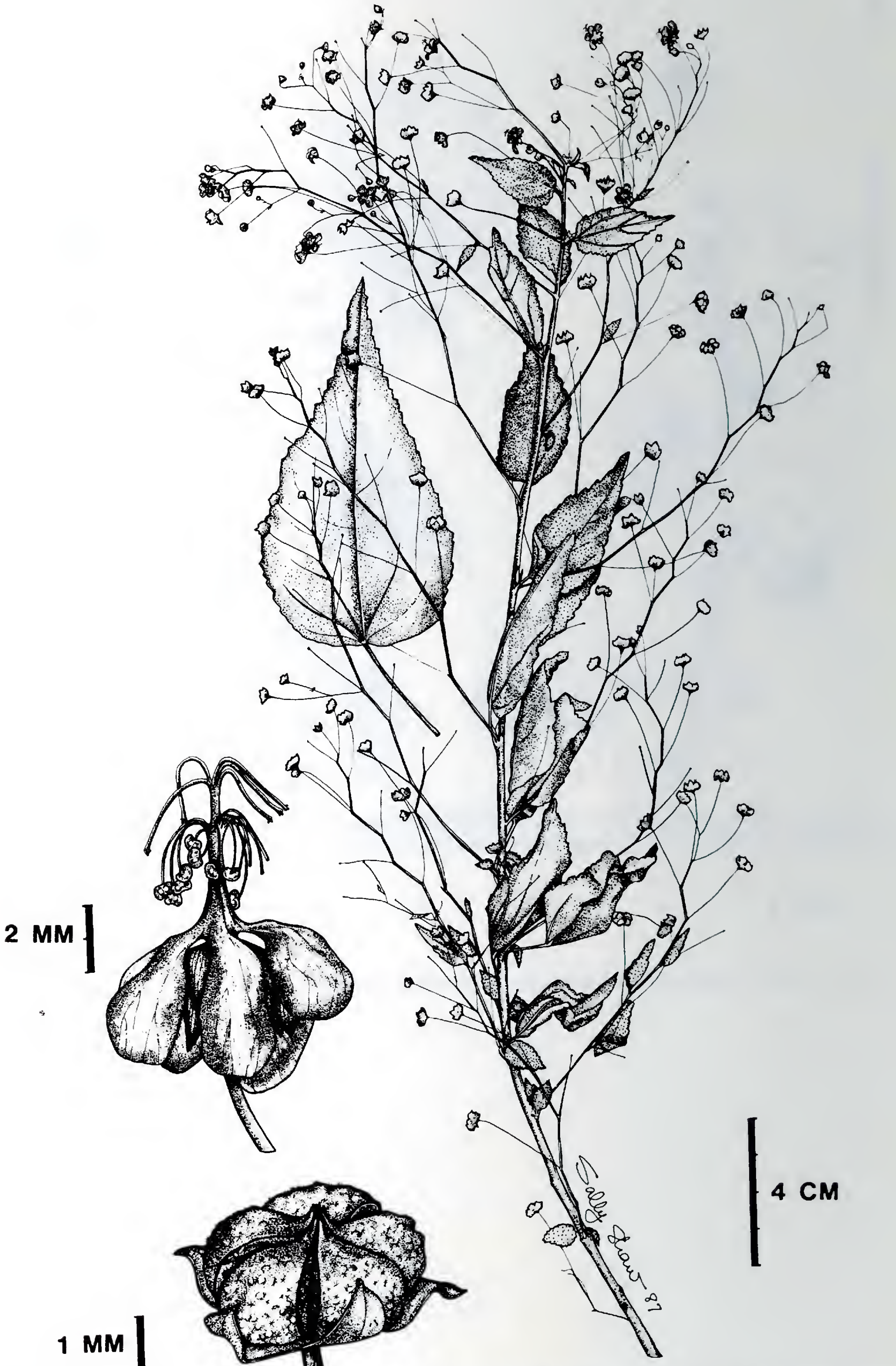

FIGURE 27. *Sidastrum paniculatum* (L.) Fryx. Flowering and fruiting branch (center) with flower at anthesis (left, above) and mature fruit (left, below).

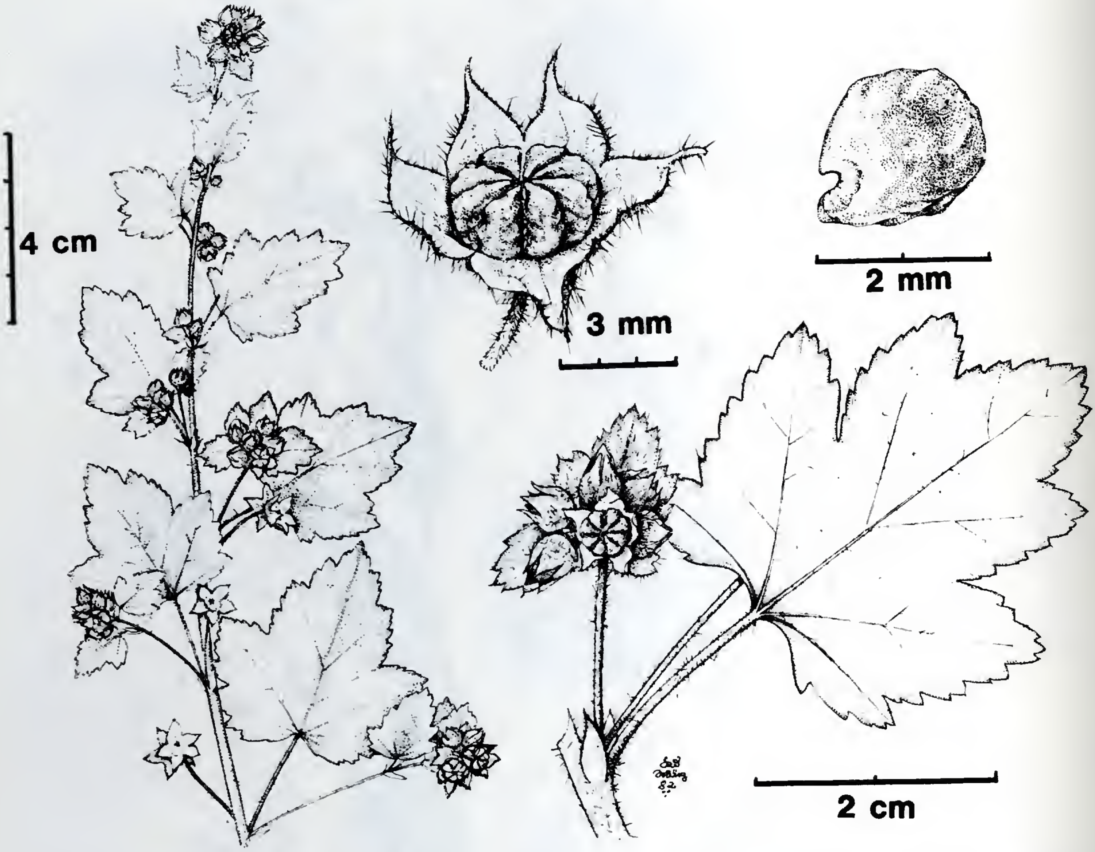

Figure 28. *Urocarpidium jacens* (S. Watson) Krapov. Flowering branch (left), with mature fruit (center), individual mericarp (upper right), and infructescence with associated leaf. [*Rzedowski 34558*]

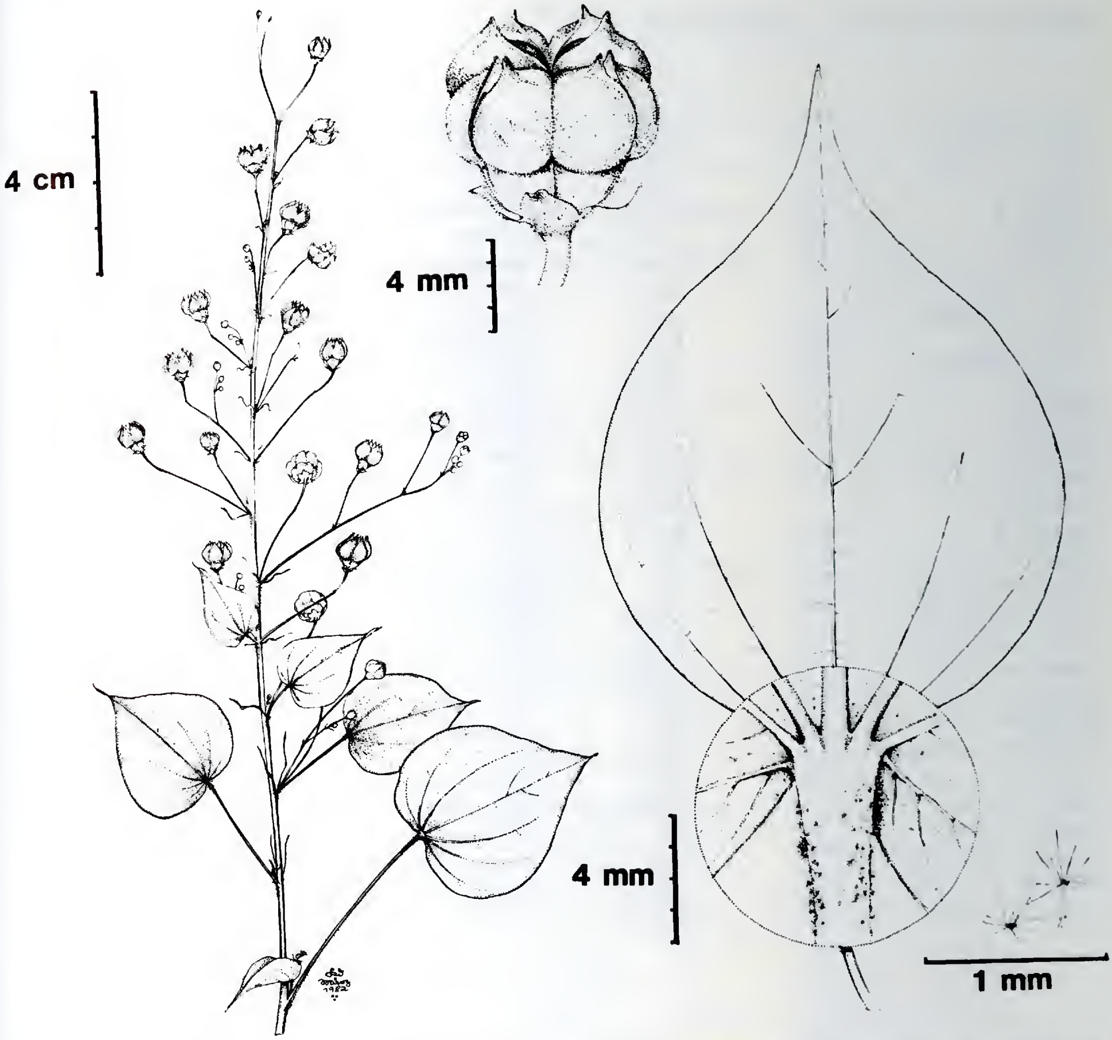

FIGURE 29. *Wissadula amplissima* (L.) R. E. Fries. Fruiting branch (left), with individual fruit (top) and climax leaf showing stipitate hairs of petiole. [*Fryxell et al. 1587*]

Appendix 1. *Abbreviations of Collectors names* .....

Avendaño, S.	(Av)
Becerra, M. E.	(Be)
Bodegas, R.	(Bod)
Cabrera, E.	(Cb)
Calvert, D.	(Cv)
Calzada, J. I.	(Cz)
Carlson, M.	(MC)
Chavelas, J. et al.	(Ch)
Clarke, O. F,	(C)
Collins and Doyle	(C&D)
Cowan, C.	(Co)
Croat, T.	(Cro)
Cruden, R.	(Cru)
Davidse, G.	(Da)
Delgado, A.	(De)
Dressler, R. L.	(Dr)
Fryxell, P. A.	(F)
Ghiesbreght, A.	(G)
Gilly & Hernández	(G&H)
Goldman, E. A.	(Go)
González-Quintero	(G-Q)
Harriman, N.	(Ha)
Hernández, X., E.	(X)
Hernández and Sharp	(X&S)
Hilerio, L.	(Hi)
Hoover, W. B.	(Hoov)
Jezepczuk, S. V.	(J)
Johnston, M. C.	(Jt)
King, R. M.	(RMK)
Koch, S. D. et al.	(K)
Langman, I.	(Lm)
Laughlin, R. M.	(La)
Lundell, C. L.	(Lu)
Marcks and Marcks	(M&M)
Martínez, E.	(Mz)
Matuda, E.	(EM)
Mell, C. D.	(Me)
Miranda, F.	(Mi)
Moldenke, H.	(Mol)
Moore, H. E.	(Mr)
Neill, D.	(Ne)
Nelson, E. W.	(N)
Oberg, R.	(O)
Perino and Perino	(P&P)
Purpus, C. A.	(P)
Roe, Roe and Mori	(R&R&M)
Saunders, J. G.	(Sa)
Seler and Seler	(S&S)
Sohns, E. R.	(So)
Spellman et al.	(Sp)
Thorne and Lathrop	(T&L)
Ton, A. S.	(T)
Torres, R.	(To)
Ulbrich, E.	(U)
Valdivia, P. E.	(V)
Vaughn et al.	(Va)
Voorhies and Sánchez	(V&S)
Webster, G. et al.	(We)
Wendt, T. et al.	(TW)
Zuill, H.	(Z)

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